

EVERYMAN'S ENCYCLOPAEDIA

IN TWELVE VOLUMES

VOLUME SIX
GIN—INARI, LAKE

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ABBREVIATIONS

The titles of subjects, which are printed first in bold type, have been abbreviated within each article to the initial letter or letters.

ac. , acre(s).	lat. , latitude.
agric. , agricultural.	lb. , pound(s).
ambas. , ambassador(s).	l. b. , left bank.
Amer. , American.	long. , longitude.
anct. , ancient.	m. , mile(s).
ann. , annual.	manuf. , manufacture.
arron. , arrondissement.	M.E. , Middle English.
A.-S. , Anglo-Saxon.	min. , minute(s).
A.V. , Authorised Version.	Mod. E. , Modern English.
b. , born.	m.p.h. , miles per hour.
Biog. Dic. , Biographical Dictionary.	mrkt tn. , market town.
bor. , borough.	MS., MSS. , manuscript(s).
bp. , birthplace.	mt, mts. , mount, mountain(s).
Brit. , British.	N. , north; northern.
c. , about.	N.T. , New Testament.
C. , Centigrade.	O.E. , Old English.
cap. , capital.	O.F. , Old French.
cent. , century (7th cent.).	O.T. , Old Testament.
chem. , chemistry.	oz. , ounce(s).
co. , county.	par. , parish.
com. , commune.	parl. , parliamentary.
cub. ft. , cubic feet.	pop. , population.
d. , died.	prin. , principal.
Dan. , Danish.	prof. , professor.
dept. , department.	prov. , province; provincial.
dimin. , diminutive.	pub. , published; publication.
dist. , district.	R., riv. , river.
div. , division.	R.A.F. , Royal Air Force.
E. , east; eastern.	r. b., riv., bank.
eccles. , ecclesiastical.	rep., repub.
ed. , edition; edited.	R.N. , Royal Nav.
educ. , educated.	Rom. , Roman.
e.g. , example.	r.p.m. , revolutions per minute.
Ency. Brit. , <i>Encyclopaedia Britannica</i> .	R.V. , Revised Version.
Eng. , English.	S. , south; southern.
estab. , established; establishment.	sec. , second(s).
fl. , flourished.	sev. , several.
Flem. , Flemish.	Sp. , Spanish.
fort. tn. , fortified town.	sp. gr. , specific gravity.
Fr. , French.	sq. m. , square miles.
ft. , feet.	temp. , temperature.
Ger. , German.	ter. , territory.
Gk. , Greek.	tn. , town.
gov. , government.	trans. , translated; translation.
Heb. , Hebrew.	trib. , tributary.
hist. , history.	U.K. , United Kingdom.
horticult. , horticultural.	U.N. , United Nations.
h.p. , horse-power.	univ. , university.
H.Q. , headquarters.	U.N.O. , United Nations Organisation
hr(s) , hour(s).	urb. , urban.
in. , inch(es).	U.S.A. , United States of America.
inhab. , inhabitant(s).	vil. , village.
is. , island(s).	vol. , volume.
It. , Italian.	W. , west; western.
Jap. , Japanese.	Wm. , William.
jour. , journal.	yd(s) , yard(s).
Lat. , Latin.	

G

Gin: 1. Spirit distilled from grain and flavoured with juniper berries. Its name is derived from Fr. *genièvre*, juniper. There are 2 main types of Eng. G., London G., dry, and Plymouth G., sweetened. The spirit as distilled is almost pure alcohol and flavourless, giving a neutral basis for cocktails (q.v.). It does not improve with keeping, and straw-coloured G.s are coloured with caramel. For Dutch G., Schiedam, Schnapps, see HOLLANDS.

2. Cotton-cleaning machine. The saw G. invented by EH Whitney in 1792 was a prin. factor in the growth of the Amer. cotton-growing industry.

Ginastlan, tn on the SW. coast of Cebu, Philippine Is., 65 m. SW. of Cebu. Cotton, tobacco, sugar-cane, rice, etc., are grown. Pop. 8390.

Ginchy, Fr. vil. 7 m. E. of Albert, which was the scene of many engagements in the battles of the Somme in 1916. In 1928 a Brit. war memorial to the Guards was erected there.

Gindely, Anton (1829-92), Austrian historian, b. Prague, where he received his education. In 1862 he was appointed prof. of hist. at the univ. there, and not long afterwards archivist to the kingdom of Bohemia. His works include *Geschichte des dreissigjährigen Krieges*, 1869-80, *Rudolf II und seine Zeit*, 1862-5, and *Geschichte der Gegenreformation in Böhmen*, 1894.

Gingelly Oil, see SESAME OIL.

Ginger (*Zingiber*), E. Indian plant belonging to the genus of Zingiberaceae, which has been cultivated from the earliest times in the East Indies. It grows in damp, moist places in various parts of tropical Africa, and is cultivated particularly in Jamaica, where many varieties are dealt in in commerce. The cultivation is quite simple. When the rootstock is taken up, on the withering of the stems, it is prepared for the market by scalding, or by scraping and washing, the first method yielding black G., the second white G. G. is put to many uses: medicinally as a stimulant and carminative, as a condiment or preserve, and sometimes, when green and mixed with other herbs, as a salad.

Gingham, a cotton fabric originally manufactured in India, whose name is derived from Gingsamp (France), where it was first made in Europe.

Ginguené, Pierre Louis (1748-1816), Fr. man of letters, b. Rennes in Brittany and educ. at a Jesuit college there. In 1777 he composed a comic opera entitled *Pomponin*. In 1791 he pub. *Lettres sur les confessions de J. J. Rousseau*, in which he defended the life and ideas of that author. He spread the principles of justice and

liberty at the beginning of the Fr. Revolution in his paper, *La Feuille villageoise*, and this led to his imprisonment during the Terror; he only escaped on the downfall of Robespierre. G.'s ablest work is his *Histoire littéraire de l'Italie*, 1811-35.



DRYING PEELD GINGER

Ginkell, Gedart, see ATHLONE, EARL OF. **Glakgo**, Chinese name for genus of deciduous coniferous plants consisting of a single species, *G. biloba*, the maidenhair tree, which bears large, yellow, edible fruit and delicate foliage. The Japanese hold the tree as sacred and plant it round their temples.

Ginosa, It. tn, in Apulia (q.v.), 27 m. WNW. of Taranto (q.v.). Pop. (com.) 10,000.

Ginsburg, Christian David (1831-1914), Heb. scholar, b. Warsaw, Poland. He was educ. at the Rabbinic College in his native city, and afterwards pursued the study of the Heb. scriptures, with special regard to the *Megillot*, in England. His first trans. was that of the *Song of Songs*, followed by a trans. of *Ecclesiastes*. In 1879 he was appointed a member of the committee for the revision of the Eng. version of the O.T. His *magnum opus*

Ginseng

was the *Massorah*, pub. in 3 vols. Later pub. were *The Text of the Hebrew Bible in Abbreviations*, 1903, and *Facsimiles of Manuscripts of the Hebrew Bible*, 1905. He also contributed many articles to the *Ency. Brit.*

Ginseng, *Panax quinquefolius* (synonym *Aralia quinquefolia*), family Araliaceae; a N. Amer. perennial herb, valued by the Chinese for the medicinal properties of the roots.

Gioberiti, Vincenzo (1801-52), It. philosopher, publicist, and statesman, b. Turin. He was educ. for the priesthood, ordained in 1825, and subsequently appointed prof. of theology in the univ.

Giocondo

See also G. Gentile, *Prophets of the Italian Rising* (in Italian), Florence, 1923.

Giocondo, La (Fr. *La Joconde*), famous portrait of Mona (Madonna) Lisa, 'with the ineffable smile,' wife of Francesco del Giocondo (1468-1528), painted in Florence by his friend Leonardo da Vinci (c. 1502). It is said that he worked on it for 4 years, and even then considered it unfinished, surrounding her with all kinds of amusements to keep the divine smile upon her lips. The beautiful canvas was acquired by Francis I for the Louvre. It was stolen from there in 1912 but subsequently recovered. There have naturally been many copies, and it was even claimed, but



CULTIVATING GINGER IN JAMAICA

of his native city. In 1833, he was imprisoned on an accusation of promoting the Liberal movement. He then went to Paris and Brussels, at the latter city spending 11 years as tutor in an academy. During this time he wrote many works of philosophical importance, formulating his theory of platonic idealism tinged with pantheism. His political ideal was a confederated Italy, with the pope at the head and the king of Sardinia as military guardian. His chief works are *Il Gesuita moderno*, a pretended exposure of the Jesuits which precipitated the transfer of rule from clerical to civil hands; *Del primato morale e civile*, identifying religion with civilisation and reaching the conclusion that the Church is the axis on which the well-being of human life turns; *Protologia*, on the same theme but less emphatic; *La Teoria del sovrannaturale*, on the reality of revelation and a future life; and *Introduzione allo studio della filosofia*, on method and terminology in philosophy; and *Nuovo prospetto delle scienze economiche*. See Massari, *Vita di V. Gioberiti*, who had ed. his entire writings.

on insufficient evidence, that the Louvre treasure was not the original. Vasari, Michelet, Théophile Gautier, Gustave Planche, George Sand, and Walter Pater have written enthusiastically about the picture.

Giocondo, Fra Giovanni (c. 1433-1515), It. architect, engineer, and antiquary, b. Verona. He became a Franciscan friar and went to Rome to study archaeology, where he made a collection of ancient inscriptions. From 1489 to 1493 he was in Naples as architect to the duke of Calabria, afterwards King Alfonso II. In 1495 he went to France as architect to Charles VIII. Although he made many sketch-designs for buildings, few can be confidently ascribed to him, but he was probably concerned with the Loggia at Verona; the Pont Notre Dame at Paris; and the château of Gaillon in France. He also projected the Brenta Canal from Padua to Venice, and the fortifications between Treviso and Padua. In 1514 the Pope summoned him to Rome to assist in the building of St Peter's. See studies by F. Fiocco, 1916, and G. Badego, 1917.

Gioja, Melchiorre (1767-1829), It. writer on philosophy and political economy, b. Piacenza. At Milan he was appointed by the Fr. Gov. director of the statistical bureau. G. was one of the first investigators to apply statistics to questions of public morality and political economy. *Filosofia della statistica*, G.'s latest work, contains briefly his ideas on human life, and affords the best insight into his aims and methods. He also wrote *Del merito e delle recompense*, 1818, a large treatise giving a systematic description of social ethics from the utilitarian standpoint, and *Nuovo Prospetto delle scienze economiche*, 1815-17, containing much valuable information. This last may be considered the best and most original treatment of the div. of labour since Adam Smith's *Wealth of Nations*.

Giolitti, Giovanni (1842-1928), It. statesman, b. Mondovì, in the prov. of Cuneo, and educ. at Turin. He became minister of the treasury in 1889 and minister of finance 1890-2. In 1901 he was minister of the interior and in 1906 premier. Italy having decided to join the Entente nations in 1915, G., whose views were pro-German, was replaced by Salandra, and thereafter formulated a new programme of state Socialism. He was again prime minister, 1920-1. At the height of his power he had been virtually dictator of Italy and was a statesman of undeniable abilities. His autobiography was pub. in 1922. See B. Croce, *History of Contemporary Italy*, 1871-1915, and Count Storza, *Makers of Modern Europe*, 1930.

Gioma, see DAGO.

Giordani, Pietro (1774-1848), It. author, b. Piacenza. His writings are numerous, the most valuable being the collection of letters, *Epistolario*, pub. with the *Opere*. He also wrote various critical essays, political pamphlets, eulogies, and memorial addresses. In his youth G. joined the Benedictine Order, but in 1808 he left it to become secretary of the Academy of Bologna. This office, however, he was obliged to give up in 1815 on account of his liberal political views, and from that date till his death he continued to fight for the cause of liberty, being remembered as a great patriot as well as a noted writer. G. is considered as one of the greatest classical scholars and prose writers of his day. See G. Romani, *Della vita e delle opere di Pietro Giordani*, 1868; also lives by C. Viani, 1920, and G. Leopardi, 1937.

Giordano, Luca (1632-1705), It. painter, b. Naples. The first rudiments of drawing he acquired from his father, Antonio G., who was, however, an indifferent painter. He painted with great facility at a very early age, and at the age of 13 he was placed under the instruction of Ribera. His father later took him to Rome, where he studied under Pietro da Cortona (q.v.) and copied many of the master's pictures. G. painted a great number of pictures, which may be seen in the chief galleries of Europe. One of the most famous is 'Christ expelling the

Traders from the Temple' in the church of the Padri Girolamini in Naples. Others of note are 'The Judgment of Paris,' in Berlin, and 'Christ with the Doctors in the Temple,' in Rome. See studies by E. Petraceone, 1919, and A. de Rinaldis, 1922.

Giordano, Umberto (1867-1948), It. operatic composer, b. Foggia, son of an artisan, and educ. at the Conservatory of Naples. His first opera, *Marina*, was written while he was still a student, and his next, *Mala Vita*, was produced in 1892. He was a popular composer in the tradition of romantic realism that was the vogue at the end of the last century, and most of his themes were melodramatic. His best-known opera is *Andrea Chénier*, 1896, which, however, suffered by comparison with the work of Puccini and even Mascagni. His *Fedora*, 1898, based on Sardou's play of the same name written for Sarah Bernhardt, enjoyed some success. He was still writing operas as late as 1928 when *Il Re*, founded on a fable, was produced to celebrate the reopening of La Scala at Milan, where he d.

Giorgio, Francesco (1439-1502), It. architect, sculptor, engineer, painter, and bronze-caster, b. Siena. As an architect, he designed the tn halls of Ancona (1484) and Josl (1486); and as a military engineer he remodelled the fortifications of a very large number of It. tns. His prin. authentic picture is the Madonna and Child enthroned at Siena.

Giorgione da Castelfranco (1477-1511), one of the chief Venetian painters of the High Renaissance, whose real name was Giorgio Barbarelli, Giorgione (Big George) being applied to him on account of his ability. He was b. at Castelfranco, but we have very meagre information as to the facts of his life. He appears to have been of humble origin, and was brought up at Venice, where he seems to have served his apprenticeship under Giovanni Bellini, and it was at Venice that he became famous. In 1500, at the early age of 23, he was chosen to paint portraits of the Doge Agostino Barberigo and the condottiere Consalvo Ferrante. He decorated the facades of about half-a-dozen palaces in Venice, which have long since been defaced, the most important being that of the Fondaco dei Tedeschi, 1508. All accounts of his life represent G. as being a person of great social charm, a musician, and a romantic and ardent lover. The relation of his work with that of the younger Titian, and other Venetian artists are matters that have caused much critical controversy. Quite 150 paintings are attributed to him in the European galleries, but only a few are of undoubted authenticity, notably 'Madonna enthroned between Saints Liberale and Francis' in the cathedral of Castelfranco; 'The Tempest,' Venice; 'The Three Philosophers,' Vienna; 'The Three Ages of Man,' Florence; 'The Fête Champêtre,' Louvre; and 'The Sleeping Venus,' Dresden. An important exhibition at the Doge's Palace, Venice, in 1955 of G. and his circle was greeted as a demonstration

not only of a great individuality but of his pervasive influence on painting in Venice. G. d. at Venice at the zenith of his popularity. See studies by L. Justi, 1926, and Sir M. Conway, 1929.



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'MAN IN ARMOUR' BY GIOTTO

Giotto (1267-57), Florentine painter named G. because he imitated the manner of Giotto, his great predecessor. His real name is uncertain, but he has been identified with Tommaso di Stefano or Maso di Banco. He decorated the Vatican Palace at Rome, and he painted numerous frescoes and oil pictures, many of which are extant. The following are attributed to him: 'Deposition,' in the Uffizi; 'Crucifixion' and 'Adoration,' in the Strozzi Chapel at Santa Maria Novella; and the 'Legend of Constantine and Pope Sylvester,' at Santa Croce in Florence. See G. Vasari, *Lives of the Painters*, etc.

Giotto (Ambrogio di Bondone) († 1266/7-1266), great It. artist, b. Vespignano, near Florence. There are but few known facts about his life, but he was the son of a peasant landowner, it is generally agreed, who, though of no large possessions, was of reputable standing. A doubtful legend describes his discovery by Cimabue, as a boy, making drawings of his father's

sheep. Some consider him a pupil of the Rom.-Italo-Byzantine style of decoration and fresco, though Florence in his day was an inspiring centre. His earliest works are to be found in the church of St Francis at Assisi. Here is his series of the 'Life of Christ' and the 'Allegories of St Francis.' In 1298 G. painted the altarpiece of St Peter's at Rome and designed the 'Navicella' in mosaic—Christ saving St Peter from the waves. This is still to be seen in the vestibule of St Peter's. The series of frescoes with which G. decorated the walls of the Arena chapel built in Padua in honour of the Virgin brings us to the greatest of his undestroyed enterprises. These frescoes were painted in 1303, and illustrate the life of Christ and the life of the Virgin in 38 scenes. In these G. reaches the height of his genius. G. next returned to Florence and Assisi, where he painted the 4 famous allegorical frescoes in the vault of the church: 'The Marriage of St Francis with Poverty,' 'The Triumph of Charity,' 'The Triumph of Obedience,' and 'The Glorification of St Francis.' G. was an architect and designer of sculpture as well as painter, and his masterpiece of design, the Campanile, known as G.'s Tower, was begun in 1334, when he was made chief architect of the Florentine cathedral. Though unfinished at his death, the Campanile was carried out according to G.'s plan in every detail. Its reliefs and statues are among the finest works of It. Gothic sculpture. The art of painting, as re-created by G., was carried on by his pupils and successors throughout Italy, and in its dignity and feeling for humanity and nature it laid the foundation of the great developments of the It. Renaissance. See Vasari, *Lives of the Painters*, and biographical studies by I. B. Supino, 1920; C. Garra, 1925; E. Cecchi, 1937; T. Hetzer, 1941.

Giovanni da Fiesole, see ANGELICO, FRA.
Giovanni de' Medici, see LEO (popes), Leo X.

Giovanni Maria del Monte, see JULIUS (popes), Julius III.

Gipping, see OSWELL.

Gippsland, in Australia, the SE. dist. of Victoria, named after Sir George Gipps, governor of New South Wales from 1836 to 1846. It has an area of nearly 14,000 sq. m., and though mountainous in the NW, is of a more agric. nature in the SE., where farming and cattle-grazing are carried on. Its chief mineral wealth consists of gold, silver, copper, lead, and coal. Gipsy, see GYPSY.

Giraffe, also known as Camelopard, tallest of all mammals. *Giraffa*, the Sp. name, is derived from the Arabic *saraf*, whilst the classic term *camelopard* probably came into use when these animals were introduced into the Rom. amphitheatre from North Africa. This name has now more or less fallen into disuse. The G. constitutes a distinct family of ruminants, containing 1 species only. It is a native of Africa, and is found S. of the Sahara, generally in herds of from 5 to 40. The chief characteristic of the animal is

the enormous length of the neck and limbs, and the long, tufted tail. Its tongue is also remarkable for its great length, combined with elasticity and power. The head is furnished with 2 protuberances between the ears, commonly described as horns. The G. is an inoffensive animal and usually seeks safety by flight, not being easily overtaken even by a fleet horse. When fighting it kicks swiftly with its hind legs and can make a stout resistance, being capable of even keeping off a lion. Persecution has of late years much reduced the number of G.s, and led to their extermination from many dists. G.s were first brought to the Zoolo-

logic. His library was destroyed in the sack of Rome, 1527. He was an elegant Lat. poet, and systematised classical mythology. The most valuable of his writings are the dialogues *De poetis nostrorum temporum* (ed. by K. Wotke, 1894).

Giraldi, Giovanni Battista (1504-73), It. author, b. Ferrara. He became prof. of medicine and philosophy at the univ. of Ferrara, 1525, and later prof. of the humanities. About 1542 he became secretary of state under Ercole d'Este II, and continued in that employ under Alfonso II. As a member of the Accademia delle Affidati he took the surname of Cinzio, and is commonly known by this assumed name, which, anglicised, is Cynthio. He wrote 9 tragedies, the best known of which is *Il Orbecche*, 1541. *Gli Hecatommitti* or 'A Hundred Novels,' 1565, is a famous vol. of tales, from which Shakespeare borrowed his plots for *Measure for Measure* and *Othello*.

Giraldus Cambrensis, or Gerald of Wales (c. 1146-c. 1220), Welsh medieval writer, also called Gerald de Barri. He studied in Paris, took holy orders about 1172, and soon afterwards became archdeacon of Brecknock owing to the influence of his uncle, bishop of St David's. In 1184 he accompanied Prince John to Ireland. He was elected bishop of St David's in 1198, but failed to gain possession of his see. G. wrote sev. works, all characterised by great verve and a good deal of inventiveness; treated with caution, they form a valuable source of material for the reigns of Henry II and his sons. His best-known work is the *Itinerarium Cambriae*.

Girardin, Émile de (1806-81), Fr. politician, journalist, and legislator, b. Paris, the illegitimate son of Alexandre, comte de G. (d. 1855). His idea of a halfpenny newspaper was carried out in 1836, when he founded the *Presse*, a jour. of Conservative and Royalist tendencies. Attacks on this led to the quarrel and duel in which G. killed Armand Carrel, editor of the *National*. Till the revolution of 1848 G. was occupied with politics, gradually becoming a decided Republican. In 1866 he left the *Presse* to direct the *Liberté*, in which he wrote vehemently against Prussia and voted for war (1870). His works (apart from journalism) include *La Fille du millionnaire* (comedy), 1858; *Le Supplice d'une femme* (with Dumas fils), 1865; *De la presse périodique au XIX^e siècle*, 1837; *De la liberté de la presse et du journalisme*, 1842. His first wife was Delphine Gay (1804-55), who wrote 'Lettres parisiennes,' under the pseudonym 'Vicomte de Launay,' in the *Presse* (1836-47). See his *Collected Works*, 1860-1; G. d'Heilly, *Mme de Girardin*, 1868; Saint-Amand, *Mme de Girardin*, 1874; and lives by M. Reclus, 1934, and P. Sinmare, 1934; also J. Morienval, *Les Créateurs de la grande presse en France*, 1934; and G. Weill, *Le Journal*, 1934.

Girardon, François (1628-1715), Fr. sculptor, sent by Séguier first to Anguler's



Zoological Society of London

GIRAFFE AND YOUNG

ical Gardens in London in the year 1836, and since then many specimens have been acquired which have bred in the Gardens. The G., however, is rather a delicate animal, and needs care in captivity. These animals are essentially inhab. of open country. G.s are able to browse on tall trees with the greatest of ease by reason of their long necks and flexible tongues, and they are capable of going for a long time without water and seldom feed on grass. In their native state in Africa, when standing among the mimosa-trees, they can often hardly be detected, as they harmonise so completely with their surroundings. See also CAMELOPARDALIS.

Giraldi, Giglio Gregorio, or Lilius Gregorius (1479-1552), It. poet and archaeologist, b. Ferrara. In 1507-8 he was at Milan, studying Greek. Thence he went to Modena, and became tutor to a son of Count Niccolò Rangone—Ercole, afterwards cardinal. He went with his pupil to Rome, and became protonotary apos-

studio, and then to Rome. On his return he obtained a position at court, decorating the palaces at Versailles and Trianon under Le Brun's direction. Admitted to the Academy of Painting and Sculpture in 1657, he became prof. in 1659. Chief among his works is the tomb of Richelieu at the Sorbonne. Others are the white marble medallion of Louis XIV, presented to his native Troyes, 1690; equestrian statue of Louis XIV in Place Vendôme, 1699; 'L'Hiver' and 'L'Enlèvement de Proserpine' at Versailles. G. was a friend of Condé, Boileau, Racine, and La Fontaine. He married Catherine Duchemin (d. 1698). See life by P. Francartel, 1929.

Giraud, Count Giovanni (1776-1834), It. writer of comedies of Fr. descent. His first works were poetry and satire; later he wrote mainly comedies (4 vols.), 1808, somewhat resembling Goldoni's, the most popular being *L'Ajo nell' Imbarazzo* (*Le Précepteur dans l'embaras*, 1807). His *Teatro domestico*, 1816-25, was a collection of plays for children, partly in imitation of Berquin's works, 1749-91. He raised a squadron of cavalry (c. 1798) to defend Pope Pius VI against the Fr. G. became director of all the theatres in Italy, 1813-34, but ruined himself by speculation.

Giraud, Henri (1879-1949), Fr. soldier, b. Paris, of Alsatian descent, educ. at St Cyr. A captain of the Zouaves in the First World War, he was wounded at the battle of Guise and, left on the field for dead, was taken prisoner by the Germans. A few weeks later he escaped from a hospital in Germany and made his way into Holland. At the armistice he was a major with 4 bars to his Croix de Guerre, and chief of staff of the Moroccan Div. Between the 2 world wars he saw service in the Rif campaign and, in 1939, was military governor of Metz. On the outbreak of war he was given command of an army in Holland, but was again captured by the Germans, who, mindful of previous experience, kept him under vigilant surveillance at Königstein. But again, after careful devising, G. escaped and, despite the offer of a large reward for his recapture, reached unoccupied France (April 1942). De Pétaïn he pledged himself not to join de Gaulle, but he refused to give any promise not to take up arms against the Germans. Having, however, decided to serve with the armies of Gen. Eisenhower, he escaped from France by boarding a Brit. submarine, narrowly missing being drowned, and, on the day of the allied landing in North Africa, broadcast an announcement that he had assumed the command of the Fr. forces there, thus associating himself with Adm. Darlan (q.v.). After the murder of Darlan he was unanimously chosen by the Fr. Council to be high commissioner in Fr. North Africa, as well as commander-in-chief. At meetings with de Gaulle it was agreed to set up a Committee for National Liberation under the joint chairmanship of both generals, but this arrangement was abandoned after the

creation of the provisional Consultative Assembly had brought about considerable changes in the membership of the committee. In the spring of 1944, however, his post of commander-in-chief was abolished—nominally because the Fr. forces were assigned to various allied commands, but actually because the men of the *maquis* or resistance movement distrusted him as a representative of the *ancien régime*. G. was one of the most distinguished Fr. soldiers of his day, and regarded as a leading strategist. He was awarded the Médaille Militaire in 1949, shortly before his death.

Girba, see JERBA.

Girder, beam of metal or wood intended to be supported at either end, and to carry a vertical load between the ends. A G. spans the distance from wall to wall and supports a superstructure, such as the pathway of a bridge, a floor, etc. Simple G.'s are supported at the 2 ends only, continuous G.s extend over sev. supports. The upper and lower flanges of a G. are connected by a solid web, or by an open framework of diagonal and vertical members. A sandwich G. is one which is composed of 2 wooden beams, with an iron flitch plate between, all bolted together. A box G. is one in which the flanges are connected by 2 web plates, so that a cross-section of the G. is box-like in form. G.s are mainly used in connection with bridges (q.v.), of which they form the prin. component parts, and they are employed to form the weight-bearing members in steel and iron structures of every kind.

Girdle, as a W. eucharistic vestment, is a linen cord with tassels, about 3 yds long, doubled around the waist over the alb and knotted. Its ends are used to hold the stole (q.v.) in place when that is worn. In the Oriental vestments a belt (*zone*) is worn.

'**Girdle Ness**,' originally a Fleet maintenance ship and converted by the R.N. into an experimental guided weapons ship. Her commissioning in 1956 marked a new epoch in Brit. naval hist., and the lessons learnt during her trials can be expected to have an important bearing on the design of the Brit. fighting ship of the future.

Girga, prov. and tn of Upper Egypt. Area about 575 sq. m. Cap. of prov., Suhag. Estimated pop. 1,288,425 (1947). The tn is on the Nile's l. b., and on the railway from Cairo to Aswân, 60 m. from the ruins of Thebes. It is the seat of a Coptic bishop, has a Lat. monastery, and a gov. cotton factory. Most of the inhab. are Christians.

Girgenti, see AGRIGENTO.

Girg, Garloch chieftain who, after defeating and killing Aedh, governed the Pictish kingdom, AD 878-96, in association with Eocha, and later with Donald II. G. defeated the Norsemen at Collin on the Tay and made Scone his cap. He granted various privileges to the see of St Andrews, on which its later claims to eccles. superiority were to be based.

Girin, see KIRIN.

Girl

Girl Guides, movement founded in response to demand from girls themselves in 1910 by Lord Baden-Powell as a parallel organisation to the Boy Scouts (q.v.). In 1957 the total membership in Great Britain and Ulster was 534,616, and the world membership in 42 countries was 4½ millions. The president of the Brit. G. G. Association is the Princess Royal, Olave, Lady Baden-Powell. It is the World Chief Guide. Guiding provides a progressive training for girls between the ages of 7½ and 21, as Brownies (7½-11), Guides (11-16), and Rangers (Land, Sea, and Air) (14/15-21). The Cadet section is responsible for training girls between the ages of 16 and 21 as potential Guiders. The Extension section provides Ranger and Guide companies and Brownie packs for physically and mentally handicapped children. Lone companies are formed for girls who are unable to join ordinary companies owing to their work or distance from a meeting place. The adult leaders are known as Guiders and Commissioners.

The aim of the Guide movement is to give individual character training through healthy, happy, and adventurous activities, training them in habits of observation, self-reliance, and thoughtfulness for others, teaching them services of value to the public, and handicrafts useful to themselves, and promoting their physical, mental, and spiritual development. Special emphasis is laid on camping and other outdoor activities, in training in democracy through self-gov. in the Guide and Ranger units and on right human relations through the world-wide aspect of the movement. Membership is open to every girl, irrespective of colour, class, or creed, who is willing to subscribe to the basic principles of the movement, and to keep the promises made at her enrolment. The Brit. H.Q. are at 17-19 Buckingham Palace Road, London, S.W.1, and there are training centres for Guiders in various parts of the country. See Sir R. Baden-Powell, *Girl Guiding* (new ed.), 1957; Rose Kerr, *The Story of the Girl Guides* (new ed.), 1957; Pamphlet: *What is Guiding?*

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Girls' Clubs, see MIXED CLUBS AND GIRLS' CLUBS.

Girls' Public Day School Trust, founded 1872, the pioneer of girls' public schools. It is the biggest organisation providing higher education for girls, with nearly 13,000 pupils in 23 schools divided into upper and lower groups.

Girodet-Trösion, Anne Louis Girodet de Roucy (1767-1824), Fr. painter, pupil of David. He won the Grand Prix de Rome with 'Joseph vendu par ses frères,' 1789. He travelled in Italy and France, and was awarded the Légion d'Honneur, 1816. His works, which have the Romantic

unrest, include 'Danaë,' 1798, 'The Seasons,' 1799, 'Ossian and his Warriors,' 'Scène du Déluge,' 1806, 'Sommeil d'Endymion,' 1792, 'L'Inhumation d'Atala,' 1808 (the last two both in Louvre); 'Portrait of Napoleon I.' and 'Aurora,' 1806 (Leipzig Museum). See M. Coupin (editor), *Œuvres posthumes*, 1829, and life by P. A. Leroy, 1892.

Giron, tn in the dept of Santander, N. Colombia, just S. of Bucaramanga and 175 m. NE. of Bogotá, has important gold mines. It has also trade in Panama hats and tobacco. Coffee and rice are grown. Pop. 3000.

Gironde: 1. Name given to a wide estuary in France between Bordeaux and the sea, formed by the confluence of the Garonne and the Dordogne. In the Second World War the Germans maintained a pocket of resistance at the mouth of the G. after the rest of France had been liberated (see WESTERN FRONT IN SECOND WORLD WAR). Fr. troops with heavy air support, went into action against the pocket on 14 April 1945. The resistance of the isolated Ger. troops ceased with the reduction of the is. of Oléron (q.v.) on 1 May.

2. Dept. of SW. France, formed of part of the anct prov. of Guyenne. It is fertile in the E., but is marshy and covered with pine woods in the W., being separated from the sea by sand-dunes 35-300 ft high, extending for 75 m. The dept is famous for its wine. The great claret-producing dist., the Médoc (q.v.), lies along the l. b. of the G. estuary. Cereals, fruit, tobacco, and vegetables are grown, and livestock is raised. Turpentine, pitch, and charcoal are obtained from the pine forests. The prin. tns are Bordeaux (the cap.), Blaye, Langon, Lesparre, and Libourne (qq.v.). Area 4140 sq. m.; pop. 296,500.

Girondine, or **Girondists** (Fr. *Girondins*), moderate Republican party amongst the great political parties of the Fr. Revolution, which played a prominent part in the Legislative Assembly (1791-2) and the Convention. The dept of Gironde sent as its representatives the earliest leaders of this party, hence the name. In the legislative assembly the G. held the most commanding position, being the leaders of the progressive or revolutionary party, and they were led by such men as Vergniaud and Brissot. Early in 1792 Louis XVI was obliged to form a Girondist ministry with Roland and Dumouriez as its leaders. It was, however, short-lived, and on its close dissensions broke out between the G. and the more extreme members of the assembly. After the National Convention the G. tried to save the king's life but were unsuccessful, and the last effort of the party was an ineffectual attempt to impeach Marat, who, however, overthrew and arrested many of their number. From 1793 may be dated the fall of the G. See A. Mathiez, *Girondistes et Montagnards*, 1930.

Girouard, Désiré (1836-1911), Canadian judge and legal writer, b. St Timothée, Quebec Prov.; graduated from McGill

Univ.; practised at the Montreal Bar, 1840-45. He was member of dominion Parliament for Jacques Cartier, 1878-1895, carrying the Deceased Wife's Sister Bill, 1882. Judge of the Supreme Court of Canada from 1895. He became deputy governor-general of Canada, 1910. He was one of the founders of the *Revue critique*, and his pubs. include *Lake St Louis: Old and New*, 1893 (supplement, 1903), and *La Salle*, 1893, as well as a number of legal treatises.

Girtin, Thomas (1775-1802), painter, b. Southwark, London, broke his apprenticeship with the water-colourist and engraver, Edward Dayes, sketched on the Thames with Turner, and copied drawings with him at Dr Moore's house in the Adelphi. He then toured Yorks and other parts of England, and quickly developed a fresh and vigorous water-colour technique. 'Had Girtin lived I should have starved,' said Turner. In Nov. 1801 G. went to France for his health, making splendid drawings of Paris (which were etched), but d. soon after his return. His last work was a panorama of London. His water-colour landscapes are classic examples of the use of the medium, and his vision influenced both Turner and Constable. See L. Binyon, *Thomas Girtin*, 1900.

Girton College, Cambridge, opened at Hitchin in 1869, under the name of the College for Women. It was renamed G. C. in 1872 on the purchase of the present site, in the par. of Girton, on the outskirts of Cambridge. The removal to the new building, designed by Waterhouse, took place in 1873. The relationship of the college to the univ. of Cambridge became closer by successive stages until, in 1947, women were admitted to full membership, and Girton received the status of a college of the univ. Its royal charter was granted in 1924 and a supplemental charter, recognising its new status, in 1954.

Girvan: 1. Burgh and par. of Ayrshire, Scotland, about 20 m. SW. of Ayr, on the Firth of Clyde. It is a well-known health resort, and is also noted for its herring fisheries. Pop. (burgh) 6000; (par.) 6700.

2. Riv. of Ayrshire, Scotland, rising on the borders of Kirkcudbrightshire, and flowing W. for 35 m. to join the Firth of Clyde at G. Trout and salmon are found in the riv.

Gisborne, tn in the N. Is. of New Zealand. It is the trade centre and port of the rich agric. and pastoral dist. of Poverty Bay. A sunny climate and up-to-date recreational facilities make G. one of the most attractive holiday resorts. It has daily communication with other parts of New Zealand by rail, road, and air. G. is renowned as the first landing place in New Zealand of Capt. Cook (Oct. 1769). Pop. 22,607.

Gíslason, Konráð (1808-91), Icelandic philologist, prof. of Icelandic language and literature in the univ. of Copenhagen. His penetrating studies in Old Icelandic are of fundamental importance.

Gíslason, Thorsteinn (1867-1938), Icelandic poet and journalist. His verse is serene, melodious, and full of charm.

Gisors, Fr. tn in the dept. of Eure, on the Epte. It was a Norman tn of some importance. The castle, now ruined, was partly built by Henry II of England, and there is a splendid 13th-16th-cent. church. The tn was damaged in the Second World War. It manufs. lace and linen, and has a market. Pop. 5100.

Gissing, George Robert (1857-1903), novelist and miscellaneous writer, b. Wakefield, Yorks. He studied at Owens College, Manchester. Of a curiously unpractical temperament, he had a chequered and usually unhappy career. Beginning as a clerk in Liverpool, he next went to America, returning to Europe in 1877 to study at Jena. He returned to England in 1878 and eked out the livelihood gained from his novels by taking pupils. About 1886 he took a long-projected tour to Rome and Greece. He had made an unhappy marriage in America, and his first wife being dead, he married again, equally unhappily, in 1890. In 1897 he again visited Italy, with H. G. Wells, and in 1901 was obliged by his health to settle in the S. of France, where he d. His work is marked by sombre power. Most of his novels deal realistically with suburban life, and certainly portray more of the sordid than the joyous aspects of existence. They are nevertheless inspired by a deeply moral ideal. His works include *Workers in the Dawn*, 1880 (showing the results of his study in Germany); *The Unclassed*, 1884, *Isabel Clarendon*, 1886, *Demos*, 1886, and *Thyrza*, 1887—all written from the point of view of a social outlaw—and *A Life's Morning*, 1888 (his most cheerful novel); *The Nether World*, 1889; *The Emancipated*, 1890; *New Grub Street*, 1891 (a study of the effects of want on literary powers); *Born in Exile*, 1892 (an introspective semi-autobiography); *Denzil Quarrier*, 1892; *The Odd Women*, 1892-3; *In the Year of Jubilee*, 1894; *Eve's Ransom*, 1895; *The Whirlpool*, 1897; *Human Odds and Ends*, 1897; *Charles Dickens: a Critical Essay*, 1898; *The Town Traveller*, 1898; *The Crown of Life*, 1899; *Our Friend the Charlatan*, 1901; *By the Ionian Sea*, 1901; *The Private Papers of Henry Essoford*, 1903 (largely autobiographical); *Will Warburton*, 1905; and the unfinished *Veranda*. See Morley Roberts, *The Private Life of Henry Mailland*, 1912; and *The Letters of George Gissing*, 1927; S. Alden, *George Gissing: Humanist*, 1922; R. C. McKay, *George Gissing and his Critics*, Frank Swinnerton, 1923. See also lives by F. Swinnerton, 1913; E. Gissing, 1927; G. Roberts, 1930; S. V. Gapp, 1938; and Mabel C. Donnelly, 1956.

Gissur Thorvaldsson (1808-68), the first and only earl of Iceland. He came of one of the ablest families in the country, and his own endowments were great. By nature he was a peaceable man, but he lived in an age of turbulence and was inevitably drawn into the conflicts. His most dastardly deed was

when, by the command of King Haakon of Norway, he treacherously slew Snorri Sturluson (q.v.), to whose daughter he had been married. Without pleading extenuation, it must be admitted that to have disobeyed the king's order would certainly have cost him his own life. The king, at whose hands he had accepted the earldom of Iceland, also ordered him to bring the country under the Norwegian sceptre; but G. did nothing to effect this until it was obvious that it was an alternative of life or death, and that Iceland could not be saved from this fate. He then accomplished the deed so cleverly that the pact he drew up mutually binding the king and his Icelandic subjects-to-be became the charter of liberty upon which through the ensuing centuries Iceland built her claims to political independence and ultimately won it. G.'s reputation is far from stainless. But in the whole hist. of Iceland no character has been more unjustly judged by historians. Indeed the 2 great 20th-cent. scholars, S. Nordan and P. E. Olason (q.v.), were the first to accord him a measure of justice.

Giugliano, It. tn, in Campania (q.v.), 6 m. NNW. of Naples (q.v.). Pop. (com.) 17,000.

Giuliani, Giambattista (1818-84), It. philologist, b. near Asti in Piedmont, and devoted the greater part of his life to Dante. He became prof. of moral philosophy at Genoa, and ultimately succeeded to the chair of rhetoric in the same tn. He removed later to Florence. His chief works are *Le Norme di Commentare la Divina Commedia*, 1856, and *La Vita Nuova e il Canzoniere di Dante*, 1863.

Giuliano della Rovere, se **JULIUS** (popes), *Julius II.*

Giulio Romano (Giulio Pippi de Giannuzzi) (1492-1546), It. painter and architect, b. Rome; studied under Raphael, assisting him in sev. works, including 'Benefactors of the Church' in the Incendio del Borgo, and the 'Apparition of the Cross,' in the Vatican. He succeeded Raphael as head of the Rom. school of painting. Among his early architectural works is the Villa Madama, with its fresco of Polyphemus. In 1524 Federico Gonzaga, duke of Mantua, invited him to undertake numerous renovations and decorations in that city. Here he drained the marshes and made provision against periodic floods; restored the Palazzo del Te, the cathedral, a ducal palace at Marmirolo, and numerous minor buildings; and did much pictorial work, including the 'History of Troy,' 'Psyche,' 'Icarus,' and 'The Titans.' Later he designed the façade of the church of San Petronio at Bologna. Among his other works as a painter are 'The Martyrdom of St Stephen' (Genoa), 'Holy Family' (Dresden), 'Mary and Jesus' (Louvre, Paris), and 'Madonna della Gatta' (Naples). His style is distinguished by freedom and animation. See *Ives* by D'Arco, 1842, J. P. Richter, 1928, and G. Vasari, *Lives of the Painters*.

Giura, see **GYAROS**.

Giurgiu, or Giurgevo, tn of Rumania in

Wallachia, on the l. b. of the Danube, opposite Ruse, 40 m. SW. of Bucharest. The tn, long believed to have been founded by the Genoese, was destroyed by the Russians in 1829, and recaptured by the Turks in 1854. It has a large trade in petroleum, salt, and grain, and is the H.Q. of commerce between Rumania and Bulgaria. There are also large saw-mills. Oil wells at G. were bombed by the Allies on 23 June 1944, and the place fell to the Russians early in their offensive in Aug. Pop. (1930) 31,000.

Giusti, Giuseppe (1809-50), It. poet, b. near Florence, and early began a brilliant series of poems denouncing the enemies of Italy and her own internal vices. In 1848 he became a member of the Tuscan Chamber of Deputies. Among his friends were Capponi, Manzoni, and D'Azeglio. His poems are mainly patriotic and satirical; they include *La vigiliottina a vapore*, 1833, *Lo Stivale*, 1836, *Il brindisi di Girella*, 1840, dedicated to the memory of Talleyrand, *Gli Umanitari*, *Gangillino*, and *Sant' Ambrogio*, 1846. See Susan Horner, *The Tuscan Poet Giuseppe Giusti and his Times*, 1864; F. Martini, *Giuseppe Giusti*, 1929; P. de Giovanni, *Giuseppe Giusti*, 1947. W. D. Howells trans. *Giusti in Modern Italian Poets*, 1887.

Givenchy (-lez-la-Bassée), Fr. vil. in the dept of Pas-de-Calais, 2 m. W. of La Bassée. It was the scene of heavy fighting during the First World War, particularly during the battle of Loos (q.v.), and the battle of the Lys (q.v.). Pop. 1000. See G. A. B. Dewar, *Sir Douglas Haig's Command*, 1922.

Givet, Fr. tn in the dept of Ardennes, on the Meuse and the Canal de l'Est. The church and tn hall are the work of Vauban. There are blue marble quarries near by. It has metallurgical industries, and manufs. pencils and glue. Pop. 5300. See also **CHARLEMONT**.

Givors, Fr. tn in the dept of Rhône, on the Rhône. It is a coal-mining centre, and has iron, chemical, and glass industries. Pop. 13,200.

Giza, Ghizeh, or El Giza: 1. Prov. of Upper Egypt in the valley of the Nile (q.v.). G. is notable for the many sites of archaeological interest in the locality (see MEMPHIS; SAKKARA; and below). Area 392 sq. m.; pop. 820,240.

2. Cap. of G. prov., on the l. b. of the Nile, some 3 m. S. of Cairo (q.v.). About 5 m. SW. are the pyramids of Khufu or Cheops, Kha-fa or Chephren, and Menkauf-Ra (see PYRAMID), and the Great Sphinx (see SPHINX). These sites are connected to G. by electric railway. Cigarettes are manuf. at G., and there is a market. Pop. 66,210.

Gjellerup, Karl Adolf (1857-1919), Dan. author, b. Roholte, Zealand. He studied theology, but later turned towards Buddhism. Married to a German, he settled in Dresden after 1889. His works are varied, including poetry, fiction, dramas (in which he was least successful), and criticism. Among them are *En Idealist*, 1879, written under the pseudonym of 'Epigonos'; *Det Unge Danmark*,

1880; *Germanernes Laering*, 1882—all 3 novels; *Rødtjern*, 1882, a collection of poems showing his radical tendencies; *Brynhild*, 1884, a tragedy; *Vandreaaret*, 1885, a series of reflections; 4 dramas, *Saint Just*, 1886, *Thamigris*, 1887, *En Arkanish Legende*, 1887, *Hagbad og Signe*, 1888; novels, *Romulus*, 1889, and *Minna*, 1891; *Herman Vandel*, 1891, a tragedy. He gained a Nobel prize, 1916-17. See *K. Gjellerup, der Dichter og Denker, Sein Leben in Selbstzeugnissen und Briefen*, ed. P. A. Rosenberg (2 vols.), 1921-3.

Gjinokastër, see ARGYROKASTRO.

Glabrio, **Manius Aclilius**, Rom. gen.; consul in 191 BC, when he defeated Antiochus III of Syria at Thermopylae. He celebrated a triumph at Rome in the following year, and a golden statue was erected in his honour.

Glace Bay, seaport of Cape Breton Is., situated on the N.E. coast of Nova Scotia, and the most easterly port of Canada (excluding Newfoundland). It is one of the greatest coal-mining centres of the world, the H.Q. of the Dominion Coal Company, and mining is carried on miles under the Atlantic Ocean. Power for the collieries is supplied from pulverised fuel furnaces in one of the most modern plants on the continent. G. B. has a good harbour and deep-sea fishing. Sportsmen come for swordfishing and tuna fishing. A Marconi wireless station for the transmission of transatlantic messages has been erected. Pop. 25,586.

Glacial, or **Pleistocene**, **Period** (Gk *pleistos*, most, and *kainos*, new), or **Ice Age**, the names usually given in geology to the latest div. of time immediately preceding historic times and following upon the Neogene period. The terms Earlier Post-tertiary or Quaternary era are also used with the same meaning. G. P. and P. P. are practically synonymous as regards N. and temperate regions, the former referring rather to the climatic characteristics of the age, the latter to its form of life. The chief peculiarity of the time was the marked fall of temp., and the G. conditions of N. Europe and America were similar to those of the polar regions of the present day. Great mt-glaciers and ice-fields appear to have formed and gradually advanced southwards, filling the riv. and lake basins, and submerging mts and lowlands alike. Examination of fossils in P. beds under deep oceans has shown that the changes in climate affected both hemispheres and led to the introduction of cold water faunas at the expense of forms requiring higher temps. There were 4 distinct advances of the ice, separated by interglacial periods, when the climate was at least as warm as at the present day. In S. Europe the 4 G. P.s are known as the Gunz, Mindel, Riss, and Würm periods. The first started about 600,000 years ago and the last ended about 25,000 years ago. In tropical and sub-tropical Africa pluvial periods of high rainfall appear to have accompanied each advance of the ice in higher lats.

An enormous mass of ice covered Canada and N.E. U.S.A., reaching E. to

the Atlantic, and S. even below the region of the Great Lakes and New York. The White Mts, Catskills, and Adirondacks, as well as the Rockies on the W. and the Sierra Nevadas, all show signs of former G. activity, while the glaciers of Alaska and Brit. Columbia were so vast as to form almost a single continuous field. In the old world the ice-sheet spread from Scandinavia to N. Germany, blocking up the Baltic Sea, and northward to Great Britain, across the North Sea, finally reaching to Ireland and the Atlantic. Rocks found in the fen dist. and off Flamborough Head remain as proof of the spread of the ice to the Brit. Isles from Norway before its final melting. The thickness of the sheet has been estimated at some 5000 ft. On the Continent the area covered was about 800,000 sq. m., sev. times larger than the Greenland ice-cap. Small glaciers and snow-fields extended as far S. as the Carpathians and Alps, and to the ranges and Central Plateau of France. The general tendency of all these ice-masses was to move downwards, and from the Scottish Highlands they diverged in both directions, W. and E. to the Outer Hebrides from Ross and Inverness, and to the North Sea from Moray and Aberdeen. The flow eastward was checked by the great Scandinavian sheet which pressed upon the Yorks coast and finally forced the Scottish ice NW. to the Atlantic by way of Caithness and the Orkneys. Part of it also flowed down the Clyde valley, reaching N. Ireland, S. Wales, and the Eng. Midlands, where boulders of Ailsa Craig granite have been found. The present Alpine glaciers are merely humble remains of the mighty ice-sheet which once covered all Switzerland. The former existence of glaciers is proved partly by certain deposits and partly by the peculiar character and formation of the surrounding country. The deposits consist of morainic materials, erratics, marine, fresh-water, and terrestrial accumulations, the most important substance being boulder-clay or 'till.' This is an unstratified clay full of ice-worn stones and boulders, formed under glacier ice. There are often sev. distinct layers of boulder-clay, separated by 'interglacial beds.' The lowest and oldest layer covers a vast area, extending S. to the Bristol Channel and Thames valley in England, and to the foot of the Hartz Mts in Germany. Similar deposits are met with in Switzerland and the Alpine regions, the Apennines, the Corsican Mts, the Sp. Sierras, the Pyrenees, the mt ranges of France and Germany, and the Carpathians. The rock surfaces beneath are smoothed and striated, or scratched and crushed. Other characteristic deposits are erratics, eskers, kames, Giants' Kettles, and clays with Arctic marine shells (especially in Scotland and Prussia). There are numerous lakes in glaciated regions, the streams have exceedingly irregular courses, and relatively there is little continuity of slope. Many of the lakes of N. Europe and America originated in the G. period,

and those of pre-G. origin were considerably expanded. Lake basins were scooped out by erosion, and the ice-sheet by obstructing valleys in its retreat formed temporary lakes. One such temporary basin spread from N. Minnesota and N. Dakota far into Canada. The lochs of Scotland and the fiords of Norway were very probably largely produced by the erosive action of ice. The soil of glaciated regions is not derived from the disintegration and decomposition of the rock below, but from material or 'drift' carried down from elsewhere. This, unlike alluvium, has some boulders of great size, and its materials are not generally rounded and sorted, but rather of rough, uneven surface, with numerous knolls and undrained hollows. Evidence of former G. conditions has been found also in the Caucasus, Asia Minor, India (Asia Proper), parts of Africa and South America, and in New Zealand.

The changes of climate during the G. period were accompanied by migrations of the fauna and flora of the Arctic and temperate zones. As the temp. fell, animals and plants moved from the polar to the tropical regions, returning poleward again with the rise of temp., or seeking refuge on the mt tops. Thus the climatic changes saw a series of corresponding variations of life forms in the different regions.

Terminal moraines (1200 to 2000 ft high) of glaciers are to be seen in a great amphitheatre round Ivrea on the Piedmont plains. The plains of France, Italy, Spain, S. Russia, and England S. of the Thames were not covered by any entire ice-sheet, but were frost-bound during a great part of the year. A detailed study of G. deposits tends to show that the ice must have advanced and retreated again more than once.

The true causes of the cold climate of the Ice Age are still much discussed, and many different theories are held. These can only be mentioned briefly here. Some believe it to have been the result of astronomical changes (James Croll and Prof. Ball among others); others of terrestrial changes. Another theory ascribes it to variations in the quantity of heat radiated by the sun, supposing the latter to be a variable star. Changes of level of land and sea, perhaps accompanied by a diversion of the Gulf Stream across the Isthmus of Central America to the Pacific or by submergence of the Panama Isthmus, have also been suggested. One widely spread explanation is based on the relative positions of the earth and the sun at distant periods of time. The eccentricity of the earth's orbit is subject to gradual and irregular variations. With a maximum of eccentricity the earth is 14,000,000 m. nearer the sun during perihelion than in aphelion, the difference in the amount of heat received from the sun being about one-fifth. *See also* GEOLOGY and GLACIERS.

For detailed study of the subject see Sir C. Lyell, *Geological Evidences of the Antiquity of Man*, 1863; J. Geikie, *The*

Great Ice Age and its relation to the Antiquity of Man, 1874; W. B. Dawkins, *Early Man in Britain*, 1880; W. Wright and T. Chamberlin in *The American Journal of Science*, 1892-3; A. Penck and E. Brückner, *Die Alpen in Eiszeitalter*, 1901-6; F. Smith, *The Stone Age in Northern Britain and Ireland*, 1909; A. P. Coleman, *Ice Ages, Recent and Ancient*, 1926; K. Mason, *Glaciers of Karakoram*, 1930; R. A. Daly, *Changing World of Ice Age*, 1935; and R. F. Flint, *Glacial Geology and the Pleistocene Epoch*, 1947. *See also* writings of J. Scheuchzer, Kuhn, H. B. de Saussure, J. von Charpentier, A. Agassiz, and A. Ramsay. For further references to literature see A. Geikie, *Text-book of Geology*, ii (4th ed.), 1903, and T. Chamberlin and R. Salisbury, *Geology*, iii, 1906.

Glaciers (Fr. *glacier*; Ger. *Gletscher*) are natural accumulations of ice moving under the action of gravity. G. originate in the permanent snow-fields lying above the snow-line—that is the line above which snow persists throughout the year. The ann. accumulation of fresh snow alters to a compact mass of recrystallised ice crystals known as *névé* (Fr.) or *Firn* (Ger.). As the *névé* is buried by further snowfalls, much of the air trapped between the ice crystals is driven out and glacier ice is formed. The change from snow to ice is brought about by compaction, by recrystallisation, and by the freezing of melt water percolating along the air passages in the snow and *firn*. In the final product the remaining air is restricted to isolated cavities in the glacier ice. Ice masses more than 200 ft or so in thickness flow under their own weight. In consequence tongues of moving ice or G. move downwards from the permanent snow-fields. In tropical or temperate conditions the snow-line is high (17,000–18,000 ft on peaks in equatorial Africa; 9000 ft in the Alps) and G. are confined to mts and the valleys near by. Under conditions such as occur in Polar regions to-day and which prevailed during the Pleistocene Ice Age over much of the middle lats., the snow-line descends to sea-level and extensive ice caps or ice sheets of continental dimensions develop. The following are the prin. types of glacier.

A *Cirque glacier* is one lying in a mt hollow or cirque (*cwm* and *corrie* are Welsh and Scottish terms for cirque). G. extending down a valley are known as valley G. A number of valley G. may debouch onto flat ground to form a piedmont glacier at the foot of the mts.

Where the snow-line is low extensive areas of flat ground may be glaciated. In this way plateau G. covering level uplands form. Where plateau G. become so widespread as to cover a major land mass, an ice cap or ice sheet develops. Tidal G. develop where ice moves off the land on to the sea where they form an ice cliff from which icebergs (q.v.) may originate.

The front or snout of a glacier advances when the supply of ice from the snow-field exceeds the loss through melting and

evaporation. Conversely G. retreat where wastage exceeds supply. G. disappear when the snowline rises above the level of the highest mts. This is the situation in Britain to-day where it is estimated that the snow-line would lie at about 4500 ft in the Scottish Highlands whose highest summits just fail to reach this level.

Distribution of Glaciers. Small G. occur in the tropics, in Africa on peaks such as Ruwenzori and Mt Kenya, in New Guinea, and in the equatorial Andes of South America. Cirque G. are present northwards of the Pyrenees in Europe and of the lat. of middle California in

occur also in the mts of New Zealand and South America.

In the geological past the amount of ice present has varied considerably. For much of the time it appears that no ice caps were developed on the earth. But there is proof of extensive development of G. during parts of the Pre-Cambrian eras, the Devonian and the Permo-Carboniferous. The most recent Ice Age dates from the Pleistocene, when continental ice sheets spread over much of Europe and North America covering in all 8 million sq. m. During the Pleistocene glaciation the ice advanced 4 times and retreated after each advance as the climate ameliorated during warmer inter-glacial periods. The last of the 4 major advances of the ice ended about 25,000 years ago. See GLACIAL or PLEISTOCENE PERIOD.

Moving ice wears away the underlying rock and modifies the topography. Valley G. carve broad U-shaped valleys with characteristic steep sides. Outcrops of rock are smoothed off to give *roches moutonnées*, which have a streamlined form interrupted on the downstream side by a sharp break where the ice has plucked away blocks from the outcrop. The debris picked up in this way, together with the material which falls onto the moving glacier, is moraine. Moraine deposits form where the glacier deposits its load of transported debris. This occurs at the snout, where terminal moraines may form, along the valley sides, where lateral moraines develop, or where the glacier stagnates and decays, when hummocky moraine results. Glacial erratics are boulders transported by ice. Boulder clay or till is the deposit left by extensive ice sheets, usually on the lower parts of the ground they cross. It consists of angular boulders and pebbles set in a clay formed of finely-ground rock-flour produced by the passage of ice over the underlying land. The direction in which G. have moved is indicated by scratches or striae made in the rock across which the ice travelled. Irregularities in ground are also reflected in the surface of the glacier which becomes crevassed. Melt water may enter the glacier and carve tunnels and subglacial streams within the ice. The deposits formed in such streams are known as eskers, and the extensive fluvioglacial beds formed by water running from the snout of a glacier form broad outwash fans or sandurs. See J. Tyndall, *Glaciers of the Alps*, 1896; C. Wright and R. Priestley, *Glaciology*, 1922; A. E. Tutton, *The Natural History of Ice and Snow*, 1927; and H. Ahlmann, *Glaciological Research on the North Atlantic Coasts*, 1949.

Glacis, open space of ground round a fortress, sloping gently down from the covered way to the country. The insurgents are obliged to pass over it in approaching the fort, and thus expose themselves to open fire from the defenders.

Gladbach, see MÜNCHEN-GLADBACH.

Gladbeck, Ger. tn in the *Land of North Rhine-Westphalia* (q.v.), in the Ruhr (q.v.) basin, 26 m. NNE. of Düsseldorf.



D. McLeish

SÉRACS IN A GLACIER IN THE DAUPHINÉ ALPS

America where suitable mt ranges occur. Valley G. are well developed in the Alps, the Caucasus, and the Himalaya in the Eurasian continent, in W. Canada, and in Alaska. The Himalayan and Alaskan systems are particularly extensive and give rise to piedmont G.

Many of the Alaskan G. are tidal and give rise to icebergs in the NE. Pacific. The most southerly plateau G. in the N. hemisphere are those between Bergen and Oslo in Norway. Others occur in N. Norway and in Iceland. Ice caps cover parts of many Arctic Is., such as Spitzbergen and Novaya Zemlya, and reach a continental scale in Greenland where half a million sq. m. are covered by ice. The largest ice sheet at the present day is that of Antarctica which extends for 3½ million sq. m. In the S. hemisphere G.

It has coal and metal industries. Pop. 75,000.

Gladiators, professional combatants who in ancient times fought to provide public entertainment. The custom of gladiatorial fights is supposed to have come from the E. and to have been borrowed by Rome from the Etruscans. Its origin is probably to be found in the practice of honouring heroes who had died in battle by sacrificing the lives of captives. The practice spread to the funerals of all important men, the sacrifice being rendered more interesting to the spectators by the captives killing each other, and it later still became an independent form of public amusement. The first gladiatorial fight in Rome of which we have knowledge took place in 264 BC, being arranged by Marcus and Decimus Brutus for their father's funeral. In 217 BC Scipio Africanus arranged an exhibition at New Carthage; in 207 BC 24 pairs of G. fought in the Forum; while Julius Caesar, Titus, and Trajan all gave huge gladiatorial shows. Augustus made some attempt to limit the number of such exhibitions, but they had become so popular that this was impossible. They were unsuccessfully prohibited by Constantine in AD 325, and finally abolished by Theodoric (AD 500). The G. were slaves, prisoners, or criminals, who were bought and trained for the business, or freemen of the lowest class who fought for hire. They were sworn to fight to the death and any show of cowardice was punished with death by torture. The defeat of one of the combatants was marked by a cry of 'Habeti!' from the spectators, who then decided his fate, turning their thumbs downward if they wished him to be killed by the victor. The victor was rewarded with a branch of palm and sometimes received his freedom. There were sev. types of G., such as the *andabatae*, who fought blindfolded; the *mirmillones*, who fought with sword and shield; the *retiarii*, who had as weapons a net and a 3-pronged lance; and the *Thrace*s, who used a short sword and a round buckler. They were occasionally mounted. Discharged G. were known as *rudiarii*, from the *rudis*, or wooden sword, with which they were presented. The practice of gladiatorial fights never found much favour in Greece.

Gladiolus, a genus of Iridaceae, which comprises over 150 beautiful species, sev. of which are European. *G. communis*, the foxglove sword-lily, is frequently introduced into Eng. gardens; *G. cardinalis*, the red sword-lily, and *G. gandavensis*, a hybrid form, are natives of the Cape. Garden hybrids comprise early-flowering varieties, such as *G. × colvillii*, and summer and autumn varieties of *G. primulinus*, etc.

Gladstone, Herbert John, 1st Viscount (1854–1930), administrator; youngest son of Wm Ewart G., educ. at Eton and Univ. College, Oxford. He was private secretary to his father, 1880, in which year he entered the House of Commons. In 1894–5 he was chief commissioner of

works, and from 1899 to 1905 chief whip to the Liberal party. He became home secretary in 1905 and held that position until 1909, when he was appointed first governor-general of South Africa and made a viscount. He wrote *W. E. Gladstone*, 1918, and *After Thirty Years*, 1928.

Gladstone, John Hall (1827–1902), scientist, b. Hackney; educ. at Univ. College, London, and at Glessen. From 1874 to 1877 he was Fullerian prof. of chem. at the Royal Institution; in 1874 became first president of the Physical Society. He was elected F.R.S. in 1853. With Dale, he estab. the law that $\mu - 1$ is proportional to the density of a transparent gas, μ being its refractive index. His pub. works include *Life of Michael Faraday*, 1872, written from close personal knowledge; *Miracles as Credentials of Revelation*, 1873; and *Chemistry of Secondary Batteries*, 1883.

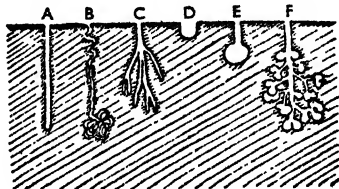
Gladstone, William Ewart (1809–98), statesman, b. Liverpool, the 4th son of John G., a Liverpool merchant of Scottish descent. His father sat in Parliament from 1818 to 1827, and was created a baronet in 1846. He was educ. at Eton, and Christ Church, Oxford, where he took a double first in classics and mathematics. G. first wanted to take holy orders, but his father insisted that he should enter Parliament. He was returned (Dec. 1832) to the first Reform Parliament as one of the members for Newark. When at the end of 1834 Peel became prime minister, he appointed G. as junior lord of the treasury, a nomination due to John G.'s connection with Peel rather than to the young man's ability, of which as yet he had given no remarkable proof. He was promoted under-secretary of state for war and the colonies in Jan. 1836, but the ministry went out in the following April. Being out of office G. devoted himself to his favourite studies. Stimulated by the Oxford Movement with which he was sympathetic, both from conviction and through his friendship with Manning, then still a clergyman in the Church of England, he pub. in 1838 his famous book, *The State in its Relations with the Church*. It was an immediate sensation and aroused considerable controversy. Macaulay referred to its author as 'the hope of the stern, unbending Tories.' In 1839 G. married Miss Catherine Glynnne of Hawarden, Flintshire.

In the general election of 1841 G. was again returned for Newark. Peel formed his second administration, in which G. was vice-president of the board of trade. G. was committed to protection and drafted the revised tariff of 1842. He now showed his consummate mastery of financial and commercial matters. Two years later he became president of the board of trade and entered the Cabinet, but resigned in 1845 on conscientious grounds on the Maynooth issue. In Dec. 1845 he returned to office as colonial secretary under Peel. Peel had been converted to free trade as being in his opinion the only means of averting famine in

rugged and mountainous, the highest peak being Graig-y-Llyn (1969 ft). These hills are the source of the R. Taf, Ely, Neath, Tawe, Rhymney, and Llwchwr, which flow into the Bristol Channel, and to the S. of them is a large and fertile plain, with a mild climate, containing many richly wooded valleys, one of which, the vale of Glamorgan, is known as the garden of Wales. The industrial prosperity is due to the presence of abundant mineral wealth. Coal is mined at Merthyr Tydfil, Aberdare, Pontypridd, Rhymney Valley, Neath Valley, and Rhondda Valley; there are large blast furnaces at Cardiff, Swansea, Aberavon, Dowlais, Briton Ferry, Port Talbot, Landore, and Merthyr Tydfil; copper, lead, and tin smelting is carried on at Swansea, Neath, and Aberavon, and zinc and nickel are manufactured. Anthracite, coking-coal, ironstone, and limestone are also mined. The co. tn is Cardiff, and Barry, Swansea, and Port Talbot are flourishing seaports. The co. has 7 parl. representatives (Aberavon, Barry, Caerphilly, Gower, Neath, Ogmore, and Pontypridd); besides 3 for Cardiff bor., 2 each for Rhondda and Swansea bors., 1 each for Aberdare and Merthyr Tydfil. Pop. 1,203,000.

Gland: 1. In its widest sense, implies a complex of secreting epithelial cells which form the walls of cavities that are quite distinct from the lymph and blood vessels, and in which the secretion collects. The goblet cells in the lining of the intestine, secreting mucus, are unicellular G.s. All G.s present internally a large secreting surface obtained in an immense variety of forms. In all, however, the essentials are an internal cavity or blind canal, a layer of secreting cells, and an enveloping network of capillary blood vessels. The specific characteristics and differences in the secretions depend not on any external and mechanical change, nor upon the anatomical form of the G., but solely upon the specific character of the epithelium which invests the internal secreting ducts. The actual secretory cells vary in appearance according to their previous degree of activity. If the cells have been at rest for some time, they contain very many granules which distend the cells. After continued activity the cells are shrunken in size, and their contained protoplasm is clearer. G.s are classified according to their functions as excretory or secretory, lubricatory digestive. They may also be arranged in groups dependent on their origin as (a) from ectoderm, e.g. sweat and mammary G.s. In some animals specially adapted G.s occur, as scent, spinning, adhesive, poison G.s, etc.; (b) from mesoderm, e.g. those of kidneys; (c) from endoderm, e.g. those connected with the main part of the alimentary canal. A common form of classification is into types as (a) tubular, simple in large intestine, compound as in pyloric G.s of stomach; (b) alveolar or saccular, where the secretory portion is much enlarged. These may be much complicated, as in a compound alveolar G. of the pancreas, where there is

a growth of still smaller saccular diverticuli growing from the main sacculi. In general the branches of G.s do not unite, but in one instance, the liver, this does occur, and in this case a reticulated compound G. is produced. The transplantation of the G.s of one living organism to another was first attempted by Dr Serge Voronoff (q.v.) in 1913 at the physiological station of the Collège de France. He proved that by grafting the sex glands (testes) of a young animal (such as a rat, ram, or bull) upon an animal of the same species showing senility he could rejuvenate his patient and prolong its life. Later, by grafting the G.s (testes) of monkeys upon human beings, it was claimed that he renewed in many human subjects their youthful mentality, physical and sexual condition. Dr Voronoff also



DIAGRAMMATIC REPRESENTATION
OF GLAND FORMS

A, simple tubular gland—large intestine; B, coiled simple tubular gland—awent gland; C, branched compound tubular gland—pyloric glands of stomach; D, E, simple saccular or acinous glands (see INTESINES); F, compound racemose or saccular gland—pancreas

grafted the thyroid G. of monkeys in 1913 upon children showing signs of cretinism, and, the cerebral cells of the experimental subjects becoming stimulated by the internal secretion (hormone) of the G., normality was in many cases achieved. These operations are not performed in Britain. The modern method of treating glandular deficiencies consists in giving oral or hypodermic preparations of the hormone, or its synthetic equivalent, normally secreted by that G. This is known as replacement therapy. An alternative method is that of tissue implantation, in which a small quantity of a synthetic preparation of the hormone is implanted into the subcutaneous tissues of the patient. The sex G.s (testes in male, ovaries in the female) and the thyroid previously mentioned are examples of ductless G.s (q.v.) or endocrine organs, which pour their secretion, in the form of a hormone, directly into the blood stream, not into a duct. Other ductless G.s are the pituitary (attached to the brain) and the adrenals, or suprarenals (q.v.) adjoining the kidneys. Lymph G.s occur at intervals along the lymphatic vessels (e.g. in the groin and the armpit). See also BIOCHEMISTRY.

2. In botany, an organ which produces more or less peculiar substances termed secretory by a process known as secretion. The secretum may collect in a cavity, or it may be thrown out at the surface (excreted). Solid G.s occur in the leaves of many saxifragas and crassulacae, where chalk is excreted; in many flowers as nectaries, when nectar is the secretum. Hollow G.s are spaces surrounded by secreting cells, and the secretum may be mucilage, gum, ethereal oil, resin, etc., such as is found in many conifers, oranges, lemons, etc. The milky juice known as latex, which is found in the dandelion, greater celandine, poppies, etc., is the secretum of G.s. Water-excreting G.s (hydathodes) occur on some leaves, and capturing G.s and digestive G.s are found in the leaves of the sundew and other insectivorous plants.

Glanders, contagious disease of horses, asses, guinea-pigs, cats, dogs, and mules, which is communicable to man. It is caused by the *Bacillus mallei*, which is expelled in the discharge from the animal's mouth or nostril. It may affect the eye, mouth, nose, or any scratch, crack, or sore with which it comes in contact, and thus enter the blood stream, where in the course of a week or two it produces symptoms. When weakness sets in the lungs are involved, and there are pains in the joints, with fever, thirst, hot skin, and other symptoms of infection of the whole body. When the disease has lasted for some time, the skin becomes affected, when pimples, pustules, and ulcers form. This form or stage of the disease is known as farcy. As the disease is a distinctly rare one, it is more often feared than seen. It can only be definitely excluded in the case of a person who has been exposed to infection when symptoms fail to develop, and when examination of the discharge reveals the absence of the bacillus. Inoculation by vaccine is a treatment that offers success. Certain of the antibiotic drugs are likely to be effective. It is frequently extremely difficult to diagnose the presence of the disease in stables, where half the animals may die before it is even suspected, and the new arrivals have already become affected. Every inducement should be given to owners, by offers of compensation, to report all suspected cases at the earliest opportunity, so that the disease may be stamped out as soon as possible. A preparation by the name of mallein can be obtained from the bacilli and used to diagnose the disease, in the same way as tuberculin is employed to detect tuberculosis.

Glanvill, Joseph (1636-80), ecclesiastic, b. Plymouth and graduated at Oxford. In 1660 he became rector of a church at Wimbush in Essex, and 6 years later of the abbey church at Bath, and in 1672 was made chaplain in ordinary to Charles II. He was an admirer of the Cambridge Platonists (q.v.). His best-known work is *The Vanity of Dogmatizing*, 1661, on a passage in which book Matthew Arnold founded his poem, *The Scholar-Gipsy*.

Among his other works are *Lux Orientalis*, 1662, *Philosophical Considerations touching Witches and Witchcraft*, 1666, and *The Way of Happiness*, 1670. See F. Greenslet, *Joseph Glanvill*, 1900; and H. S. and I. L. L. Redgrove, *Joseph Glanvill and Psychological Research*, 1921.

Glanvill, Ranulf de (?-1190), chief justiciar of England during the reign of Henry II, succeeding de Lucy in 1180. He was b. in Suffolk, near Saxmundham, and about the year 1175 he was successful over the Scottish troops under William the Lion. He eventually joined the Crusaders under Richard I, and was killed at Acre. A great lawyer, his chief work was *Tractatus de Legibus et Consuetudinibus Angliæ* (c. 1181), an ed. of which was issued by Sir Travers Twiss, 1892. In 14 books, it is valuable as the earliest treatise on the laws of England, and is comparable in its scope to the work of Bracton, though G.'s task was the more difficult in that old local customs, now feudal principles and habits of action, and a good deal of Rom. law—then lately made known to England—were still being fused into common law. The trans. of J. Beames, 1812, has been ed. by G. E. Woodbine, 1932.

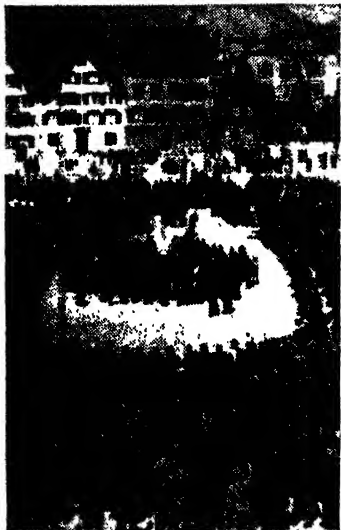
Glapthorne, Henry (1610-c. 1644), dramatist, b. Whittlesea, Cambs. A friend of Richard Lovelace (q.v.), he had a high reputation among his contemporaries, but practically nothing is known of his life. His best play, *Argalus and Parthenia*, 1639, is based on Sidney's *Arcadia*. Others are *The Tragedy of Albertus Wallenstein*, 1638, and *The Hollander, Wit is a Constable*, and *The Ladies' Privilege*, all 1640. He also wrote a poem, *Whitehall*, 1643. His collected works were ed. by R. H. Shepherd in 1874.

Glarus, or Glaris: 1. Canton of Switzerland, having an area of 264 sq. m. This canton, which contains part of the valley of the Linth, is very mountainous, its highest point being Mt Tödi (11,887 ft). There is access to the canton of Uri and the Grisons by sev. passes. The land is mostly pastoral, and some cotton is manufactured. It is specially noted for the manu. of a green cheese known as *Schabziger*. Pop. 38,700.

2. Cap. of the above canton, surrounded by high mts. From 1506 to 1516 Zwingli was priest at G. The former tn was completely destroyed by a fire fanned by a violent *Föhn* wind in May 1861. A remarkable feature of G. is the yearly *Landsgemeinde*, or general assembly, at which the local gov. and the representatives to the Swiss Federal Assembly are elected. Pop. 6000, Ger.-speaking. (See illustration, p. 18.)

Glas, John (1695-1773), founder of the Glasites, b. Auchtermuchty, Fife. In 1719 he became minister of Tealing, where he formed the sect which bears his name. It was on account of his book *The Testimony of the King of Martyrs concerning his Kingdom*, 1727, that he was suspended by the General Assembly. In this book he disagreed with national

establs. in religion, and advocated the principle of independence as being nearer to the teaching of Christ. He was afterwards joined by Robert Sandeman, who became his son-in-law and gave his name to sects in other places who were known as Sandemanians. G.'s works were pub. in 5 vols., 1782-3. *An Account of the Life and Character of John Glas* was pub. in Edinburgh in 1813. See also GLASSITES.



Swiss National Tourist Office
LANDSGEMEINDE AT GLARUS,
SWITZERLAND

Glasgow, Ellen Anderson Gholson (1874-1945). Amer. novelist. b. Richmond, Virginia. A delicate child, she educ. herself by reading in her father's library. Her first novel was *The Descendants*, 1897, and she began realistic writing with *The Voice of the People*, 1900, which she followed up with *The Battleground*, 1902, *The Deliverance*, 1904, and *The Wheel of Life*, 1911. *Virginia*, 1913, and *Life and Gabriella*, 1916, deal with family problems; *Barren Ground*, 1925, is political; while *The Romantic Comedians*, 1926, and *They Stooped to Folly*, 1929, are novels of manners. *In This Our Life*, which satirised the traditions of the South, was awarded the Pulitzer prize for 1942. Her autobiography, *The Woman Within*, appeared posthumously in 1954. A distinguished literary figure, conventional and sophisticated, she was given honorary degrees by 4 univs. and was an honorary member of Phi Beta Kappa. See A. Kazin, *On Native Grounds*, 1942.

Glasgow (from Celtic *Gleschu*, afterwards *Glasghu*, dear green spot), royal burgh, city, co. of a city, and port, in the co. of Lanark, Scotland. It lies on both sides of the R. Clyde, which is shut in by the surrounding hills; the city, however, extends for a considerable distance beyond these. There was a settlement on the Clyde when St Mungo came to convert the Strathclyde Britons and founded a church here, c. 560. William the Lion made G. a burgh of barony, c. 1178, and under James VI it was made a royal burgh in 1636. The Union, though at first resented, brought increasing commercial and industrial prosperity, and by the 18th cent. most of the prin. trades and manufs. of present-day G. were already estab.

G. possesses some of the most impressive buildings in Scotland, many of them decorated with the finest marble, situated chiefly in the commercial centre of the city. The prin. square is George Square, sometimes called the 'Valhalla of Glasgow'; because of its many statues. The Cenotaph to the fallen of 2 world wars occupies a prominent place in the square. The municipal buildings, erected in 1889, stand on the E. side of George Square; the General Post Office occupies the S. side; and on the W. is the Italianate building Merchants' House. Other notable buildings of G. include Provand's Lordship (the oldest dwellinghouse in the city), Tolbooth Steeple, Royal Exchange, and Stock Exchange. The Royal Exchange has a news-room furnished with Corinthian pillars supporting a richly decorated roof. The prin. streets run for the most part from E. to W., parallel with the riv.; they include Buchanan Street, containing the Stock Exchange and some of the finest shops; Sauchiehall Street, in which are the Fine Art Gallery and the old Art Gallery; and Argyll Street, the busiest commercial thoroughfare, leading to Trongate, the oldest part of the city. The Trongate steeple is to be seen at the E. end of Trongate, and a little further on lie the cross and city hall.

The cathedral is situated NE. of the city on a height overlooking the Molendinar stream. Built in the Early Eng. style, it is in the form of a Lat. cross with imperfect transepts. Originally it consisted of 3 churches, one of which is its famous crypt with pillars and pointed arches, then called Laigh Kirk or Lower Church. Some of the stained glass windows of the cathedral were manufactured in Munich, while those in the crypt and chapter house were executed by various Brit. and foreign artists. St Kentigern, also called St Mungo, founded a bishopric here c. 560. The see was restored by David, prince of Cumbria, in 1115, and his preceptor John Achais, bishop of G., laid the foundations of a cathedral in 1133 (consecrated in 1136), which was replaced by the present construction by Bishop Jocelyn in 1175. It was left to Bishop Bondington to complete the main part of the building, the cost of which was borne by Comyn, lord of Kilbride, and his lady, during the

reign of Alexander II. The memory of these 4 persons is perpetuated by carved bosses of their heads in the vaulting of the Lower Church. In the 15th cent. Bishop Blacader raised the beautiful rood screen, together with the unfinished S. transept, built over the burying ground consecrated by St Ninian in 399. Under the central vaulting of the Lower Church St Mungo is buried, and his well is still to be seen near by. Of the 12 pre-Reformation cathedrals in Scotland, St Mungo, and St Magnus in the Orkneys, were the only ones to escape destruction during the Reformation. G. is also the see of a Rom. Catholic archbishop.

G. Univ. (q.v.) is situated at Gilmore-hill; the city is an educational centre, and the Royal Technical College, which is affiliated to the univ., is the oldest foundation of its kind in the world, instructing annually 1000 day and 3000 evening students, and in affiliated classes 4500 evening students. Other important colleges and institutions in G. include the School of Art, the G. and W. of Scotland Commercial College, and the Scottish National Academy of Music. The corporation, through its education dept, provides 285 day schools. Over 25,000 young men and women study technical and commercial subjects at the evening continuation classes, and Stow College has been organised to provide trade and technical instruction. Notable schools for boys are G. High School, a medieval foundation, and G. Academy (founded 1845). G.'s art galleries in Kelvingrove Park take the place of the McLellan Galleries, which, with their pictures, were acquired by G. in 1856. Kelvingrove Gallery was first opened as part of the 1901 International Exhibition, and officially opened as an art gallery and museum in 1902. The G. Art Gallery is noteworthy for its representation of European painting from the 15th cent. onwards and sev. important additions have recently been made. Associated with the art galleries and housed in them is a museum comprising sections devoted to archaeology, geology, natural hist., ethnology, and technology. In archaeology the section showing prehistoric relics is of direct local interest. The ship-building section contains much to attract both expert and layman and includes the Spencer collection of early ship models as well as later models of historical interest. The Scott collection of arms and armour ranks high in comparison with similar collections throughout the Continent. A gift from Sir Wm Burrell included a collection of pictures, tapestries, porcelain, and bronzes. Near the art galleries stands the Kelvin Hall (1927), an addition to the buildings and institutions controlled by the municipal authorities, on the site of the old Bun-house building (burnt down in 1925). The hall is the ann. venue of the city's exhibitions, fairs, carnivals, etc.

The G. Corporation Libraries Dept has its H.Q. at the Mitchell library, which has more than 500,000 vols. available for

reference. Stirling's library and Elder Park library also have important reference collections. Other libraries include the Commercial library, Gorbals Dist. library (containing representative collections of books in 25 foreign languages), and Town-head library, with special collections of books and periodicals for the use of blind readers.

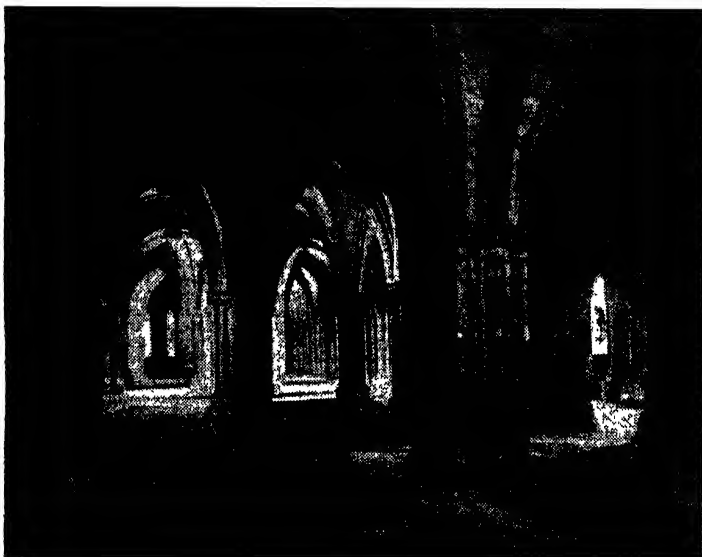
The Scottish Orchestra in G., where Sir John Barbirolli first won fame, has been known for nearly half a century. The Citizen's Theatre is one of the chief Scottish creative dramatic centres.

There are 4 large open spaces in G., one in each quarter of the city. The Green lies towards the E. and covers 140 ac., Queen's Park lies to the S. and comprises 100 ac., Kelvingrove Park is in the W. quarter and contains about 40 ac., while Alexandra Park in the N.E. consists of 85 ac. In the S. also are the Bellahouston and Linn Parks. Altogether the G. corporation owns 88 public parks and 601 open spaces and children's playgrounds. The city also possesses fine botanic gardens containing the Kibble Crystal Art Palace, a large glass structure for popular entertainments, Hampden Park, the ground of Queen's Park Football Club, can accommodate 150,000 spectators.

The Broomielaw is the name given to G. harbour, and being over 400 ft wide, and at least $1\frac{1}{2}$ m. long, it is able to accommodate vessels of every description. The 18 m. of riv. running from Albert Bridge in the centre of G. harbour, highest point of the riv. now navigable by sea-going vessels, and Port G., are all administered by the Clyde Navigation Trustees, though G. harbour itself has a frontage of $4\frac{1}{2}$ m. of this length. The riv., originally a fordable salmon riv., has been successfully straightened and deepened in such a manner that the scour of the tides keeps the channel clear of itself and comparatively little dredging is required. The rise and fall of the tide at G. Bridge varies between 10 ft 9 in. and 12 ft 6 in. The R. Clyde is spanned by many bridges. The Dalmarnock bridge was erected in 1891; the Rutherglen bridge was reconstructed in 1896. St Andrew's suspension bridge spans the riv. from the Green to Hutcheson Town, a dist. also approached by the Albert bridge. The Victoria bridge, built of granite, replaces the old bridge constructed by Bishop Rae in the middle of the 14th cent. The most important of all the bridges, the G. or Broomielaw bridge, composed of granite, is a continuation of Jamaica Street; reconstructed in 1899, it proved inadequate for the constantly increasing traffic, and the George V bridge was opened a short distance downstream in 1927. In 1924 further dock accommodation was required and construction was begun on land between Shieldhall and Renfrew. It is connected by rail and a road joining the new trunk road of the G. corporation scheme. The total tonnage of shipping using G. harbour (1954-5) was 14,773,027, and the total value of merchandise

imported and exported in 1963 was nearly \$256 million. In 1914 Loch Katrine was raised 5 ft and connected by tunnel with Loch Arklet, providing storage for 2,050,000,000 gallons of water. Additional works increased the city's water supply by 10,000,000 gallons daily. Gasworks were opened at Govan in 1921 and an electric generating station at Dalmarnock bridge in 1920. In the Second World War G. and Clydeside sustained sev. severe enemy air raids,

many lighter industries. Its textiles, carpets, threads, sewing machines, and food products are known all over the world. During recent years a number of new industries have been estab. in the Clyde area, including the manuf. of motor trailers; electric welding machinery; electrodes; electric lamps, batteries, and electric household appliances (vacuum cleaners, fires, and cookers); silk and artificial silk garments; seamless containers; safety-razor blades; and motor



GLASGOW CATHEDRAL: THE CRYPT

Dun Engraving Co.

The crypt was originally a separate church, the Laigh Kirk. In the centre of the picture is St Mungo's tomb.

notably on 13 and 14 Mar. 1941, when 1000 persons were killed and 40,000 houses were damaged, some of G.'s great tenement blocks being among the buildings most severely hit.

G. has maintained the reputation of the Clyde as the greatest shipbuilding riv. in the world. Innumerable ships of all classes have been built on the Clyde, including the world's largest liners *Queen Mary* and *Queen Elizabeth*; a \$20,000,000 fleet for the Canadian Pacific Steamships Ltd.; and the most powerful battleship ever built, H.M.S. *Vanguard*. G. engineers built the first strait ship to cross the Atlantic, and also the Forth bridge and London Tower bridge. While the heavier industries of shipbuilding and engineering have been predominant, the Clyde area has also developed

service equipment. Among the newer products which are being manufactured by firms already estab. in the dist. are mechanical loaders and shovels, synthetic resin glues and insulated cloths, machines for bottle-making and labelling, gravel and sand washing, and the mechanical packing of foodstuffs, glass silk for heat insulation and sound deadening.

G. is under the control of the lord provost, magistrates, and town council of the city. There are 113 popularly elected members of the town council and there are also 2 *ex-officio* members, the dean of guild (head of the Merchants' House) and the deacon-convenor (head of the Incorporated Trades). The town councillors elect from their own number the lord provost, 20 bailies, the riv. bailie, and the

riv. bailie depute. All the water supplies, gas, and electricity, and municipal tenements, as also the meat, cattle, fish, fruit, vegetable, and cheese markets are owned by the corporation. In 1889 an Act was passed placing the entire city of G., with its surrounding dists., in the co. of Lanark. Two years later 6 suburban burghs and sev. suburban dists. were added, thus increasing the area of 6111 ac. to a total of 11,861 ac. The municipal area of G. is 39,725 ac. G. returns 15 members to Parliament. Pop. (estimated) 1,100,000. See G. Eyre-Todd. *The Story of Glasgow, 1811, History of Glasgow, 1931; W. F. MacArthur, History of Port Glasgow, 1932; A. Macgill, Glasgow: its rise and progress, 1935; and Colm Brogan, The Glasgow Story, 1952.*

'Glasgow,' Brit. light cruiser (4800 tons). At the outbreak of the First World War this ship formed part of Adm. Cradock's squadron, which fought against the Ger. Adm. von Spee's squadron at the battle of Coronel (q.v.), 1 Nov. 1914. During the battle she was particularly engaged by 2 Ger. cruisers, *Leipzig* and *Dresden*, but escaped. She joined Adm. Sturdee's squadron, which avenged the Coronel defeat at the battle of the Falkland Is. (q.v.) on 8 Dec. 1914, and was one of the ships sent in pursuit of the Germans in the early stages of the battle, and also later on. She was responsible for sinking the *Leipzig* and, later on, the *Dresden*.

Glasgow Academy, public school for boys, founded in 1845. Since 1920 it has been controlled by the Glasgow Academicals War Memorial Trust. The Academy is a day school with 300 boys in the Preparatory School and 550 in the Upper School. There is a house for 40 boarders.

'Glasgow Herald,' the largest circulation 'quality' newspaper in Scotland. Founded in 1783 as the *Glasgow Advertiser*, it became the *G. H.* in 1805, and has been a daily newspaper since 1859. It is as widely read by the agric. community and in the Highlands as it is in the industrial belt of Central Scotland, where its authority as the leading commercial and shipbuilding newspaper is acknowledged. The *G. H.* has long been celebrated also for its literary features, to which many eminent authors are contributors.

Glasgow School, group of painters living in Glasgow, Scotland, at the turn of the century, including amongst others Sir David Cameron and Sir John Lavery. See D. Martin, *The Glasgow School of Painting, 1902.*

Glasgow University, founded in 1451 under a bull of Pope Nicholas V, at the instance of Wm Turnbull, bishop of Glasgow. The site was for more than 4 centuries on the High Street, where, in 1460, James, 1st Lord Hamilton, made to the univ. a gift of buildings and land, and subsequent benefactors gave additional properties. On this site the lovely Old College was built in the 17th cent., and this was the home of the univ. until 1870, when it migrated to its present site on Gilmohill, above Kelvingrove Park. There are now 6 faculties: arts, divinity,

law, medicine (including dentistry and veterinary studies), science, and engineering. There are 75 chairs, and the number of students (1956) exceeds 8000, of whom nearly a quarter are women students. The univ. library now contains nearly half a million vols. The Hunterian Museum was founded in 1804 in memory of Wm Hunter, the eminent anatomist and scientist, who in 1783 bequeathed to the univ. his books, MSS., coins, and anatomical and other collections.

Glasnevin, residential suburb of Dublin, Rep. of Ireland. Many famous Irishmen are buried in its cemetery. There are also botanical gardens and an agric. college.

Gaspeil, Susan (1882-1948), Amer. dramatist and novelist, b. Davenport, Iowa. Educ. at Drake Univ., she worked for a time as a reporter. Her play, *Alison's House*, its heroine modelled on Emily Dickinson, was awarded the Pulitzer prize in 1931; others are *Trifles*, 1917, *Bernice*, 1918, *The Inheritors*, 1921, and *The Verge*, 1921. Among her novels are *The Glory of the Conquered*, 1909, *Fidelity*, 1915, *The Morning is Near Us*, 1940, *Norma Ashe*, 1942, and *Judd Rankin's Daughter*, 1945. Her first husband, George Cram Cook, was a founder of the Provincetown Players.

Glass, term which covers a wide range of substances which differ widely in chemical composition and physical properties, but which possess the essential characteristic of having cooled from a state of fusion to become solid without crystallisation. G. at room temp. can be regarded as a liquid which is of such a high viscosity that it behaves as a rigid elastic solid. Many G.s when maintained at a suitably high temp. for sufficient time will devitrify, that is to say that some of the components crystallise out, the crystals causing opacity. Most commercial G.s can be regarded as mixtures of silicates, but borate and phosphate G.s are made for special purposes. Window and plate G. are usually made by fusing silica (sand), sodium carbonate (soda-ash), or sodium sulphate (saltcake), and calcium carbonate (limestone); magnesium carbonate is often added in combination with calcium carbonate as dolomite. Flint G., which is used widely for cut crystal glassware, is made from sand, potassium carbonate (pearl-ash), potassium nitrate (saltpetre), and red lead; and heat-resisting G. from sand, boric acid or borax, soda-ash, and hydrated alumina. Many chemical substances are used as constituents of G.s for optical purposes, where it is necessary to produce G.s with precisely defined optical characteristics of refractive index and dispersion. Coloured G.s are produced by the addition of metallic oxides to a colourless base G. Thus ferrous iron gives bluish green, cupric oxide blue green, oxidised manganese violet-red shades, cuprous oxide and colloidal gold ruby colours, cobalt oxide blue. Opal G. is obtained by the addition of calcium and sodium fluorides or by tin and arsenic or calcium phosphate. Compounds of about 35 of the chemical elements are in use for

glass-making at the present time. Great care is exercised in selecting the raw materials, since their purity and often their degree of subdivision will affect the quality of the ultimate product. The choice of sand is most important as all natural sands contain iron which imparts a green colour to the resultant G. The iron impurity must be as low as possible, but in certain types of glassware, the green colour can be neutralised by oxidising the iron to the ferric state, giving a yellow coloration, and then by superimposing a complementary colour. This process is known as decolorising and

many, not even equalled. Under the Romans, the manuf. of G. spread over Europe and was introduced into Britain. In the Dark Ages, G. was again made in the 7th cent. AD in England and continued throughout the Middle Ages—especially famous is the Wealden G. made in glasshouses estab. by Norman immigrants in the Weald of Surrey, Sussex, and Kent. Venetian G. was made in London in the 16th cent., and from that time onwards G. of all kinds has been made, but it was perhaps in the 18th cent. that Eng. work stood pre-eminent. That this was so was chiefly due to the fact that the Eng. flint G. was greatly superior in brilliancy to the Bohemian product and lent itself especially to the art of cutting. Diamond, wheel, and stipple engraving of G.s was practised with great skill in Germany, Bohemia, and the Netherlands from the late 16th cent. to the end of the 18th. In America much fine G. was made by the Ger. emigrant Heinrich Wilhelm Stiegel about the middle of the 18th cent. For the manuf. of bottles and jars, see BOTTLE.

MANUFACTURE.—The melting of G. from the raw materials is carried out either in a tank furnace or in individual crucibles or pots in a pot furnace. Tank furnaces are used for large-scale commercial production mostly by automatic processes where a continuous supply of G. is required for delivery to the fabricating machinery. Pot furnaces are used for the production of smaller quantities of G. for hand manuf. and melting is intermittent.

Tank Furnaces.—A tank furnace consists of a large bath, the bottom and side walls of which are built of refractory clay blocks previously fired to a high temp. (see fig. for cross-section of tank). The bath may be as large as 100 ft by 35 ft by 5 ft, but

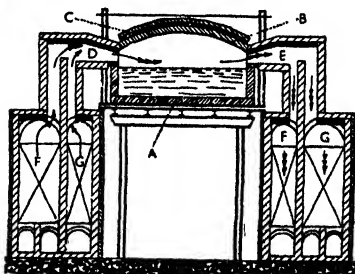


Ivor Noël Hume

BOTTLE FOUND IN SUSSEX, SECOND OR THIRD CENTURY AD

common decolorisers are manganese or selenium, both of which colour the G. pink.

HISTORY OF GLASS MANUFACTURE.—The earliest specimens of glassware so far discovered are attributed to the Egyptians in the 15th cent. BC, though the anc. Assyrians were also expert in G. making. There is a whole series of Assyrian clay tablets (from the library of King Ashurbanipal, 7th cent. BC), dealing with G. making, in the Brit. Museum. It was, however, not until Graeco-Rom. times that any considerable development of the industry took place. The Romans greatly developed the industry, and were acquainted with the arts of G.-blowing and sheet-making. From the 11th to the 16th cent. Venice was the home of the art of making beautiful vessels of glassware, and towards the end of this period there were produced objects of art which have never been excelled and, in the opinion of



CROSS-SECTION OF REVERSIBLE REGENERATIVE GLASS TANK FURNACE

A, refractory tank blocks; B, furnace crown; C, crown insulation; D, inlet port for mixed gas and air; E, exit port for waste gases; F, air regenerators; G, gas regenerators. The direction of the gases is reversed periodically so that the incoming gases are preheated by the heat transferred to the regenerators by the outgoing waste gases.

tanks of smaller size are in general use. The bath is covered by an arched roof or crown constructed of silica brick which will withstand the high temps. at which the G. is melted. The tank is usually heated by producer gas or fuel oil and air, but other fuels are used, e.g. natural gas, particularly in America. In the case of gas firing the gas and air inlets or ports are located round the sides of the tank above the G. level and prior to introduction into the furnace the gas and air are preheated by passing through the hot waste gas flues; both the regenerative and recuperative principles are used for this preheating and the fuel efficiency of the furnace is thereby increased. The end of the furnace at which the raw materials are introduced is known as the melting end, and the temp. increases from this point for some distance along the tank and then decreases towards the working end, the point at which the G. is removed for fabrication.

Pot Furnaces.—A pot furnace is a large enclosure usually circular in shape and containing a number of pots arranged around the circumference. Access to the pots is arranged through working holes around the side of the furnace. The gas is introduced through an inlet at the centre of the furnace floor.

The Melting of the Glass.—The batch from which the G. is melted consists of a mixture of raw materials or 'frit' mixed with a proportion of broken G. or 'cullet.' The mixture is introduced either into the melting end of the tank or into the pot at temps. varying from 1300° to 1600° C., depending on the kind of G. Many reactions occur between the raw materials as they melt and large quantities of gas are evolved. The molten mixture reaches a stage at which it consists of a viscous mass full of bubbles which eventually rise to the surface and escape. The process of removing the bubbles is known as 'fining.' In the case of the tank furnace there is a continuous change from the raw material at the melting end to the refined G. at the working end, the temps. at points along the tank being controlled so that the G. passes through the correct temp. cycle for the melting and fining processes. The production is thus a continuous one, with continuous filling at the melting end and continuous extraction from the working end. In the case of pot melting the cycle of operations from filling to working is controlled by varying the temp. of the furnace, and when refined the contents of the pot are removed for fabrication.

METHODS OF FABRICATION.—There are 4 main methods of fabricating the G.: (1) by blowing, (2) by pressing, (3) by pouring, rolling, or drawing, (4) by allowing the G. to cool in the pot—a method peculiar to optical G. manuf. Although the first 3 methods were originally evolved by hand manipulation, and as such are still used at present, automatic methods have been developed for large-scale production.

1. **Blown Glass.** The process of blowing was invented by the Romans early in the Christian era and the methods em-

ployed to-day are still closely similar. The blowing pipe or 'iron,' which consists of a tube about 5 ft long, is dipped into the molten G. which is 'gathered' by rotating the pipe. After removal from the furnace the rotation is continued so that the symmetrical form of the molten G. is maintained. The shape of the G. gathering can be modified by manipulation of the pipe either by spinning it about its own axis or by swinging it in its own plane, and by such methods the blower can work the G. into the approximate shape of the final article. The G. may now be transferred to a mould and blowing is continued until the article fills the mould. The G. is then broken away from the pipe and further processing is required to finish off the broken edge. This process is used largely for hollow vessels, but the manuf. of bottles and electric-light bulbs is carried out largely by automatic methods, the machines imitating the actions of the G. blower. However, in the automatic blowing process a preforming operation is often carried out in which a hollow vessel is first formed by means of a plunger operating in a mould called the parison mould. The hollow vessel or parison thus forms the basis for the subsequent blowing operation in the final mould, the transfer from the parison mould to the final mould being carried out automatically. Crystal glassware is also produced by blowing, except that considerable hand manipulation with a few simple tools is necessary to fashion the vessel while it is attached to the pipe. The flint G. used for this type of glassware enables the manipulation to be carried out over a wide range of temp. Window G. was originally produced by blowing. In the Bohemian process sev. gatherings are necessary to give the mass of G. required, and the gathering is rotated in an open mould to form a neck for the subsequent blowing of a hollow cylinder. By alternate blowing and reheating of the gathering remote from the pipe, and by swinging in a pit, a cylinder about 5 ft long is formed. The closed end of the cylinder is opened with shears and the cylinder is spun in a furnace until the end is uniform with the remainder of the cylinder. The cylinder is then detached from the pipe with a cold iron and the end from which the pipe was detached is removed to give a cylinder of uniform diameter. The cylinder is split longitudinally with a diamond and is opened out and subsequently flattened by reheating and rubbing down on to a flat surface. In the older crown process a large sphere is blown from the gathering and an iron rod or 'pundy' is attached to the sphere diametrically opposite the pipe which is now detached leaving a circular hole. The open-ended sphere is now reheated and spun until a circular disk is formed. The point at which the pundy is detached from the disk yields the 'bullion,' which is a characteristic feature of windows glazed with G. made by the crown process. These processes of making sheet window G. have now been superseded by the rolling and drawing processes described

below. G. tubing is made by a combined blowing and drawing method. The gathering is first shaped to form a short thick-walled cylinder and a punt is attached to the end of the cylinder away from the blowing pipe. Then as the blower blows into the cylinder the second man pulls the punt away, elongating the cylinder and thus decreasing the wall thickness. The rate of draw determines the diameter and wall thickness of the tubing. Again the method of hand manuf. has largely been copied for machine production, although various methods are employed for producing the initial thick-walled cylinder mechanically



Chance Brothers Ltd.

CASTING AND ROLLING

The manufacture of coloured optical filter glass

2. *Pressed Glass.* In the pressing process the G. is gathered on the gathering iron and is then dropped into a heated metal mould. A plunger is brought into the mould and the molten G. is squeezed between mould and plunger until it is rigid. The G. therefore takes up the shape of the mould and plunger. This method is capable of adaptation to mechanical methods. The G. leaves the furnace along a channel known as a feeder and flows through an orifice where the required mass is cut by shears and drops by gravity into the mould. A number of moulds are arranged around the circumference of a rotating horizontal table, and after one mould receives its G. it moves on to receive the plunger and at the same time the next mould moves into place to receive G. The pressing method is used largely for domestic hollow-ware, signalling lenses, motor headlamp lenses, and articles of a similar kind.

3. *Pouring, Rolling, and Drawing.* The processes of pouring, rolling, or drawing are used for producing G. in sheet form, and the bulk of the G. produced by such

methods is used for window glazing. The earliest methods of making plate G. were by the method of pouring or casting. The contents of a pot were poured on to a flat table and were rolled into sheets varying in thickness from $\frac{1}{4}$ to 1 in. Guides moving in front of the roller determined the width of the sheet. Owing to the fact that the G. had been in contact with the table and roller, the surfaces were such that clear vision was obscured. The first improvement on this method was the Bichereux process in which the G. is poured from the pot behind a pair of rollers from which it passes on to a moving table, the speed of the table being synchronised with that of the rollers. This produces a much smoother sheet than the original process. After cooling the sheet is transferred to a large circular table on which it is held by plaster of Paris. The table is rotated and 2 circular rotating disks are lowered into contact with the G. The G. surface is first ground by feeding coarse sand and water on to the surface, and this is followed by finer grades of sand until a finely ground surface is obtained. The process is repeated, using felt polishers and rouge to give a polished surface. The Bichereux process is still employed for plate G. manuf., particularly where very large sheets or special thicknesses are required. However, for mass production of polished plate G., a continuous rolling process, using tank-melted G., is used. The molten G. emerges from the working end of the tank over a weir and passes through a pair of water-cooled rollers from which it cools and passes through the annealing lehrs. Sheets are cut to size from the continuously moving ribbon and these are transferred to tables for grinding and polishing. The grinding and polishing process is also continuous, the G. passing through a series of grinders each of which uses a slightly less coarse abrasive. The continuous process of rolling is also used for the production of figured and wired G. For the production of figured G., that is G. with a formal pattern impressed upon it, the rollers are machined to the appropriate pattern and the G. takes up that pattern as it passes through them. Wire-netting is often introduced at the point before the G. passes through the rollers and such G. is used largely for glazing factory roofs where some reinforcement is necessary to hold the G. together in case of cracking. For the production of clear sheet window G. it is necessary that the sheet should be formed with a smooth, clear surface, and it is therefore essential that it should not come into contact with either metal rollers or a metal table. The process usually employed in this case is known as the Fourcault process. The molten G. issues from a slot in a fireclay float or debiteuse which is depressed into the G. surface in the making end of the tank. Molten G. wells up through the slot and the stream is drawn away as a sheet by means of a series of rollers above the debiteuse in a vertical tower. These rollers only come

into contact with the surface of the sheet after the G. is rigid and do not therefore distort the G. surface.

4. *Optical Glass.* Optical G. requires the most particular attention, because it is essential that it should be homogeneous and should not absorb light. It is therefore necessary to use the finest raw materials, and the essential quality of homogeneity is attained by stirring the G. in the molten state after melting and fining has been completed. After stirring the pot is removed from the furnace and is transferred to another furnace for slow cooling. When cold the crucible is removed, broken, and the fragments removed from the G. or broken into smaller lumps. The product is carefully examined for flaws, and any pieces with marked defects are rejected. The accepted G. is once more heated to the softening point, moulded into the required shapes, and then subjected to a prolonged process of cooling. Further close examination reveals a large percentage of defective pieces, so that it is not surprising that the price of good optical G. is high. Optical G.s are required to fulfil in greater or less degree the following demands. They must be homogeneous, transparent, free from colour, and internal strain, stable to atmospheric influences, of a certain degree of hardness to resist scratching, and possess specified refractive and dispersive powers.

ANNEALING OF GLASS.—Annealing of G. is necessary after fabrication in order to avoid stresses which will occur if the G. is cooled too quickly. The stresses arise from the fact that during cooling temp. differences must exist across any piece of G. and therefore the G. will contract to different degrees at different points. So long as the G. is in a plastic condition it can adjust itself to these differences, but once any part of it has become rigid permanent stresses will appear when the G. has reached a uniform temp. There is always a tendency for the stresses to be relieved and if sufficiently high the stress release will occur by breakage. High stresses are often put into G. by controlled heat treatment, the outer surface of the G. being heated to redness and then being cooled rapidly either by air blast or by immersion in oil. This treatment has the effect of imposing high compressive stresses on the surface and, as G. usually fails under tension, has the effect of increasing the strength of the G. Such G. is known as toughened G., and if breakage occurs it fractures into tiny fragments which avoid risk of injury.

SAFETY GLASS.—In addition to the reinforced wired G. mentioned earlier, safety G. consisting of alternate laminations of G. and transparent cellulose or cellulose derivative is made under the name of Triplex G. In manu. the composite sheets are cemented together and are subjected to high pressure in a hydraulic press.

COLOURED GLASSES.—Coloured G.s are made for various purposes. Coloured decorative glassware has been made from the earliest times, but nowadays many

coloured G.s are made for the specific purpose of confining the light they transmit to definite regions of the spectrum, being opaque to other regions. Thus ultra-violet transmitting and infra-red transmitting G.s are available which absorb practically the whole of the visible spectrum. A wide range of G.s which transmit only certain portions of the visible spectrum is available, and these G.s have wide applications in photography and in physical and chemical apparatus. A filter G. has been developed during the last few years which absorbs infra-red rays while transmitting a high proportion of the visible spectrum. Such a G. is very valuable in projection apparatus, where it is necessary to prevent heat from the projection lamp reaching the lantern slide or film while the visible light remains unchanged in intensity and colour.

FIBREGLASS.—In recent years considerable progress has been made in drawing G. into fine fibres and subsequently spinning the fibres into threads which can be woven into cloth. This material has excellent electrical, heat, and sound insulating properties and has a wide variety of uses. Owing to the fact that it is stable up to the softening point of the G., it can be used at temps. at which other insulating materials fail. In addition to cloth, tapes, and sleeving for wires, this material is available in various forms for placing round steam pipes and also for placing between walls for heat and sound insulation. See also GLAZING; STAINED GLASS.

See P. Bate, *English Table Glass*, 1913; J. F. Chance, *A History of Chance Bros. Ltd.*, 1919; F. Buckley, *A History of Old English Glass*, 1925; W. A. Thorpe, *English Glass*, 1935; R. McGrath, *Glass in Architecture and Design*, 1937; P. Marson, *Glass and Glass Manufacture*, 1939, 1949; J. Gloag (editor), *The Place of Glass in Building*, 1943, 1944; C. J. Phillips, *Glass, the Miracle Maker*, 1946; W. B. Honey, *Glass* (H.M.S.O.), 1946; Sir Hugh Chance, *A Century of Optical Glass Manufacture in England*, 1948; Du Mont Publishing Company Ltd., *The Glass Buyer's Guide*, 1949; F. Neuburg, *Glass in Antiquity*, 1949; and Information Sheets about glass issued by Chance Brothers Limited.

Glass, Stained, see STAINED GLASS.

Glass-crab, name given to *Phyllosoma*, the young form of *Palaemon*, a genus of edible crustaceans found in the Mediterranean.

Glass-snake, name applied to all individuals of the genus *Ophisaurus*, family Anguillidae; they are serpent-like lizards about 3 ft long, with rudimentary limbs and an elongated, brittle tail. *O. ventralis* is common in North America, and in many ways resembles the Brit. slow-worm; it lives on snails, worms, insects, etc., and spends much of its time underground. *O. gracilis* inhabits the E. Himalaya and Burma. *Pseudoglossus*, an allied genus, is found in S. Europe.

Glassie, Hannah, writer on cookery of the 18th cent. She was a London habbit-maker, became bankrupt in 1754, and d. before 1770. Her most famous work was

The Art of Cookery, 1747, and she also wrote *The Compleat Confectioner*, about 1769, and *The Servant's Directory*, 1770. She did not write 'First catch your hare,' but did write 'Take your hare when it is cased' (i.e. skinned).

Glassites, Scottish religious sect, founded by John Glas or Glasie (1695-1773) (q.v.). The sect which he formed, also known as the Sandemanians, from Robert Sandeman (1718-71), a disciple of Glas, practised community of property, abstinence from certain kinds of flesh food, the weekly celebration of communion, and the holding of 'love feasts.' It detached itself from the Presbyterian body to join the Independents.

Glasswort, common name of species of the genus *Salicornia*, family Chenopodiaceae. Also called marsh samphire, crab-grass, etc. They grow on the seashore and in salt marshes, and are widespread in S. Europe and North Africa. There are sev. Brit. species, *S. stricta*, *S. prostrata*, and *S. perennis* being most common. Soda can be obtained from G. by burning, and was formerly often obtained in this way for the manuf. of glass and soap.

Glastonbury, municipal bor. and mkt tn of Somerset, England, 5 m. SW. of Wells, on the R. Brue. G. was once an is., but now forms a peninsula, surrounded on 3 sides by the riv. It was originally called the Is. of Avalon or Apples, and is very picturesque. G. is famed for its abbey, dating from the year 708 when it was built by the Saxon, Ina, in place of the Brit. monastery founded about 610. Now a ruin, it illustrates sev. different periods of architecture. The ruins of the church, St Joseph's Chapel, and the Abbot's Kitchen, are the only surviving buildings. St Joseph's Chapel ruins are of the Transitional period of the 12th cent. It is remarkable for its crypt, which was not inserted beneath it until the 15th cent. There is a legend that Joseph of Arimathea came to G. and founded a church there; on the spot where he planted his staff sprang up a Holy Thorn, flowering each Christmas Day until cut down by Puritans (grafts are, however, still said to flourish). G. Tor is a hill upon which the last abbot of G., Blessed Richard Whiting, was martyred for his adherence to the Rom. Catholic Faith, 1539; it is the property of the National Trust. A lake-vil. was discovered in G. in 1892, pointing to the existence of Celtic tribes. Other features of interest are the market cross and St George's Inn. There are leather and shoe industries. Pop. 5200. See A. G. Chant, *The Legend of Glastonbury*, 1949.

Glatz, see Kłodzko.

Glauber, Johann Rudolf (1604-68), Ger. chemist, b. Karlstadt, Franconia. He is chiefly famous for his discovery of G.'s salt (q.v.), which he prepared, in 1658, and identified with a natural mineral salt found in waters throughout Europe, and having a medicinal value. He also produced hydrochloric acid from oil of vitriol and salt. He was an alchemist and a

voluminous writer. His *Opera Omnia* (Amsterdam), 1661, were trans. into Eng. in 1689.

Glauber's Salt, see SODIUM SULPHATE.

Glaucos, see CREUSA.

Glauchau, Ger. tn in the dist. of Karl-Marx-Stadt, on the Zwickauer Mulde, 15 m. W. of Karl-Marx-Stadt (q.v.). It has manufs. of textiles, machinery, and musical instruments. Pop. 35,000.

Glaucoma (Gk *glaukos*, bluish green), disease of the eyeball characterised by an increase of pressure of the fluids within it. This pressure or tension causes the crystalline lens to assume a greenish-grey or bluish-green hue. The condition is in part mechanical, in part congestive, and results from the iris's outer margin being pushed against the cornea. G. occurs mostly at or after middle life, leading to increasing loss of sight, unless remedied in time by an operation upon the iris or sclerotic. It may, however, be necessary to remove the damaged eye, in order to preserve the vision of the unaffected one.

Glaucinite, hydrated silicate of iron and potassium found in the muds deposited at the bottom of the sea. The various colours of these deposits are probably due to the presence of G., which is itself green. G. occurs in masses of minute crystals; these masses are often rounded, and it is believed that they represent casts of the shells of Foraminifera which after dissolution of the shell are liberated. It is possible that such casts have been broken down into fine particles which are transported by currents and so distributed amongst the different deposits. G. is found rarely in the oldest rocks, but more plentifully in the Secondary and Tertiary formations.

Glaucus: 1. Builder and steersman of the *Argo*, who escaped unwounded from Jason's fight with the Tyrrhenians, but sank to the bottom of the sea and became an ocean divinity, often surnamed Pontius.

2. Charioteer, the son of Sisyphus, king of Corinth, and Merope, daughter of Atlas, often surnamed Potnieus. He provoked Aphrodite by the exceeding swiftness of his mares, and the goddess inspired them with such fury that they tore him to pieces.

3. Lycian prince, son of Hippolochus and grandson of Bellerophon, an ally of Priam in the Trojan war. He had a famous conversation with Diomed, and exchanged his golden armour for Diomed's iron suit. He was killed by Ajax.

4. Son of Minos II and Pasiphae, smothered in a tub of honey, but restored to life by Polydus, the soothsayer.

Glaucus, name given to a genus of nudibranchiate gastropods found in the Atlantic and Pacific Oceans; they have long, slender, slug-like bodies, with 3 pairs of lateral outgrowths, and the heads are furnished with tentacles. They are of a greeny-blue colour, whence their name.

Glavsevmorput', see NORTHERN SEA ROUTE.

Glazebrook, Sir Richard Tetley (1854-1935), physicist, b. West Derby, Liverpool. Educ. Liverpool College; Trinity

College, Cambridge (scholar)—5th wrangler 1876; fellow 1877. Principal, Univ. College, Liverpool, 1898-9. Director, National Physical Laboratory, 1899-1919. Prof. of aviation and director of dept of aeronautics, Imperial College of Technology, 1920-3. Chairman of the Advisory Committee for Aeronautics from its formation in 1909, and also, until 1933, of the Aeronautical Research Committee which succeeded it in 1920. Albert medalist, Royal Society of Arts. With Dr (later Sir) Napier Shaw, he took a leading part while at the Cavendish Laboratory in organising the teaching of practical physics. He also did valuable work on questions relating to the determination of the fundamental electrical units. Wrote *Science and Industry*, 1917. Editor of the *Dictionary of Applied Physics*, 1922-3.

Glazing is the art of fixing glass into supporting frames, e.g. windows, doors, roofs. The glazier of the less specialised type may cut the glass himself, but more frequently G. and glass-cutting are 2 entirely separate crafts. The actual fixing agent employed is putty. This is a mixture of whiting (calcium carbonate, CaCO_3) and 'boiled' linseed oil (i.e. linseed oil previously heated to about 150°C . with litharge, lead acetate, or some similar drier). On exposure to the air the putty hardens and thus keeps the glass in position. In G., the putty is usually spread by hand, the glass placed in position and held by nails, and the putty then trimmed with a putty knife. Putty is not generally used for indoor G., appropriate wooden beadings serving the purpose both efficiently and more elegantly. Frames or sashes for holding the glass are made of wood or metal; of the latter material lead is used for small lights, chiefly for decorative purposes. The small pieces of glass are placed in the lead framework, and the edges of the lead are then pressed over. Much so-called leaded glass consists of large panes on to which a sham framework of lead has been cemented. Various kinds of glass are used for particular types of G.; thus for glass roofs and skylights wired glass, i.e. glass with wire-netting in it, is commonly employed, while safety glass (see GLASS) finds wide application in motor vehicles, etc. See also STAINED GLASS.

Glazunov, Alexander Constantinovitch (1865-1936), Russian composer, b. St Petersburg. After being taught music at home as a child he studied with Rimsky-Korsakov. He composed his first symphony before he was 18, and its success decided his future career. Balakirev did much to help him and Liszt did something to make him known outside Russia. In 1889 his second symphony and his symphonic poem *Stenka Razin* appeared. These were followed by numerous compositions, including symphonies, overtures, marches, chamber music, songs, etc., and music for the ballets *Raymonda*, *Ruses d'amour*, and *The Seasons*. He was appointed director of the St Petersburg Conservatory in 1905, but wrote little

after that to augment his earlier output. He left Russia in 1928, and settled in Paris.

Glebe Land: 1. In eccles. law, is the land which belongs to a church as its dowry. Every church is entitled of common right to house and glebe, and formerly no church could be regularly consecrated without such house and land. Where an incumbent before his death has manured and sown G. L. at his own cost with corn or any other grain, he is entitled to dispose, by his will, of all the profits accruing from the crops sown by him. Where the total income of the incumbent of a united benefice appears to be more than sufficient for his due maintenance, the whole or some specified part of the G. L.s may be given as a perpetual endowment for the support of any adjoining poor benefice. G. L., generally speaking, is exempt from tithe consistently with the canon law maxim that the church shall not pay tithes to the church. The exemption does not, however, extend to the lessee of the rector. Sales of G. L.s may be effected by incumbents under the Glebe Lands Act, 1888, with the approval of the Ministry of Agriculture.

2. In the civil law G. L. denotes the soil of an inheritance, and the serfs of the glebe were said to be *glebe adscripti* or attached to the soil. See Sir H. J. Phillimore, *Ecclesiastical Law of England*, 2nd ed., 1895, and G. C. Cheshire, *Modern Law of Real Property*, 7th ed., 1954.

Glee, in music, vocal composition in at least 3 parts, each taken by only 1 voice, and consisting of 2 or more contrasted movements. The subject may be of any type, and a G. is sung unaccompanied, usually by male voices. It is distinguished from a madrigal by being less polyphonic, and from a part-song by the greater independence of its parts. It is entirely Eng. in origin and cultivation, and its best period was during 1760-1830, the most famous composers of G.s being T. A. Arne, Samuel Webb, Richard Stevens, and John Wall Callcott.

Gleig, George Robert (1796-1888), author, b. Stirling. Educ. at Glasgow and Balliol College, Oxford, he entered the army, and served in the Peninsular war (1813), and in America (1814). In 1820 he took orders; became chaplain of Chelsea Hospital, 1834, chaplain-general of the forces, 1844, and inspector-general of military schools, 1846. He was a most voluminous writer and his works include *The Subaltern*, 1826, his best-known novel, founded on incidents in the Peninsular war; *The Campaign of New Orleans*, 1821; *Chelsea Pensioners*, 1829; *History of India*, 1830-5; *Lives of Military Commanders*, 1831; *The Hussar*, 1837; *The Story of the Peninsular War*, 1839; and *Lives of Warren Hastings*, 1841; *Clive* 1848; and *Wellington*, 1862. See W. Maquin, *A Gallery of Illustrious Literary Characters*, 1873.

Gleim, Johann Wilhelm Ludwig (1719-1803), Ger. poet, b. Ermsleben, near Halberstadt. He gave great encouragement and assistance to the young and

ambitious poets of his day, and on this account earned for himself the name of 'Father G.' He wrote a good deal of moderate poetry, his patriotic *Preussische Kriegslieder von einem Grenadier*, 1758, displaying considerable force of expression and genuine sentiment. His other works consist chiefly of odes and wine and love songs in the style of Anacreon. His collected works were pub. in 8 vols., 1811-14. See lives by W. Körte, and R. Weinmann, 1920.

Gleiwitz, see GLIWICE.

Glen, William (1789-1826), poet, b. Glasgow. He was the son of a merchant, and first took to trade and farming, but soon gave these up and pub. a book of poems in 1815. He is remembered for his Jacobite ballad, 'Wae's me for Prince Charlie.'

Glen Cove, city of New York, U.S.A., in Nassau co., on the N. shore of Long Is. Sound. It manufs. office supplies, clothing, radios, wood products, and hardware, and is a summer resort area. Pop. 15,000.

Glen Innes, tn in N. Tableland of New South Wales, Australia, 423 m. N. of Sydney by rail. Surrounded by fertile grazing dists. Pop. 5910.

Glenalmond, Perthshire, Scotland. The name given to the valley of the R. Almond, the finest part being called Sma' Glen. It is one of the most picturesque valleys of Scotland. Trinity College (10 m. N. of Perth), a public school for boys, was opened in 1847. It was founded under a plan devised in 1841 by Gladstone and others for a Scottish Episcopalian institution modelled on the greater Eng. schools.

'Glenart Castle,' Brit. hospital ship which was sunk on 26 Feb. 1918 by a Ger. submarine in the Bristol Channel. Only 38 persons out of 200 were saved.

Glencairn, Earls of, Scottish title, first borne by Alexander Cunningham of Kilmaurs, Ayrshire, who was created earl 1488 and d. shortly afterwards. It is taken from a par. of Dumfriesshire, Scotland. Among the more famous earls were:

William, 4th earl (d. 1547), who supported Henry VIII's Scottish policy and opposed the duke of Albany. He joined Angus and Lennox (1524) to place their young king under control of a council of regency. He was defeated (1544) at Glasgow Muir by Arran.

Alexander, 5th earl (d. 1574), supported Knox and the reformation in Scotland, and in 1561 was commissioned to destroy the monasteries in W. Scotland.

William, 9th earl (c. 1610-64), organised the Highland rising of 1653, but was defeated at Dunkeld, 1654. He strongly supported Charles II, becoming lord chancellor of Scotland on the Restoration.

James, 14th earl (1749-91), was a friend of Burns. The title became extinct with John, 15th earl, 1796.

Glencoe: 1. Wild, gloomy valley of N. Argyll, Scotland, extending from Loch Leven E. for 10 m. The mts rise steeply on either side (3000-3766 ft), and the bed

is swept by Ossian's 'dark torrent of Cona' (R. Coe), which enters Loch Leven. The pass is noted for the treacherous massacre of the Macdonalds in Feb. 1692, brought about by Dalrymple and Capt. Campbell. G. is now the most popular rock-climbing centre in Scotland.

2. Tn of N. Natal (q.v.), South Africa, on the railway from Ladysmith (q.v.) to Dundee. There are important coal-mines in the vicinity. Pop.: Whites, 2200; Bantu, 2705; Asiatics, 1293.

Glendale, name coined from the R. Glen, Northumberland, England, and applied to an extensive rural dist. covering 147,941 ac. There is only 1 tn of any size, Wooler (q.v.), and the dist. is made up of 44 other pars. G. is very sparsely populated, and contains some most impressive scenery, including the Cheviot Hills (q.v.), and the fertile valley of the R. Till, together with beautiful vales and moors to the E.

Glendalough, mt glen of the Rep. of Ireland, situated 10 m. NW. by W. of Wicklow and 8 m. from Rathdrum. It is watered by the stream Glenealo, a trib. of the Avonmore, and is famous for its picturesque beauty. The ruins of an anct city, which was a bishop's see from the 6th cent. to 1214, are situated here; chief among them are the 'Seven Churches,' one of which was the anct cathedral. A new scenic road crosses the mts to Hollywood.

Glendower, Owen (Owain ap Gruffydd) (c. 1359-c. 1416), Welsh chieftain claiming descent from Llewelyn the Great and the ruling princes of Wales, an opponent of the Eng. in Henry IV's reign. He had been patronised by Richard II, but rebelled against the increasing Eng. centralisation and domination of Wales under Henry IV. He laid claim to the crown of Wales (1402), and refusing a definite engagement, checked 2 Eng. expeditions by wearing out the king's forces among his mt fastnesses. G. defeated the Eng. near Knighton, 1402. On the third Eng. march to Wales, he retired to the mts. With Mortimer and Hotspur he formed a conspiracy against Henry, but was defeated at Shrewsbury (1403). He also allied with Scotland, Ireland, and Charles VI of France. In 1405 he was defeated by Henry, Prince of Wales, and subsequently his influence and power declined. He remained hostile to the Eng., however, to the end of his life. The nature and date of his death are not certain. He was the last serious champion of Welsh independence against the Eng. kings, and is prominent in sev. Welsh legends. See life by J. E. Lloyd, 1931.

Gleneagles, picturesque glen in S. Perthshire, Scotland, about 1 m. S. of Auchterarder, through which flows the Ruthven Water. Gleneagles Hotel, although not in the glen, is famous for its golf course.

Glensel, tn and resort of South Australia, situated in Adelaide co. on the W. coast of Holdfast Bay, and 5 m. SW. of Adelaide. Here in 1836 South Australia

was formally proclaimed to be a Brit. colony. It is connected with Adelaide by tram and bus. Pop. 14,000.

Glenfinnan, hamlet and glen in Inverness-shire, Scotland, on Loch Shiel, 18 m. W. of Fort William. A tower marks the place where the Young Pretender (Prince Charles Edward) raised his standard in 1745.

Glenгарри, vil. of co. Cork, Rep. of Ireland, 11 m. N.W. of Bantry. It is a favoured beauty spot, standing at the head of a harbour of the same name, and an is-studded arm of Bantry Bay. Garnish Is. has tropical vegetation. Pop. 740.

Glenгарry, valley of the Garry, in Inverness-shire, Scotland. It was the property of the Macdonells and gives its name to the Highland bonnet or cap. The riv. is in process of being dammed as part of the Garry-Moriston hydro-electric scheme.

Glenlivet, valley of Banffshire, Scotland, through which runs the Livet. It is some 20 m. SW. of Huntly and has a noted whisky distillery.

Glenmore, or the **Great Glen**, valley of Scotland which stretches for more than 60 m. across the central part of the country, from the NE. at Inverness to the SW. at Fort William. The Caledonian Canal, constructed by connecting the lochs Ness, Oich, and Lochie, flows through the glen.

Glenroy, narrow glen, 14 m. long in the Lochaber dist. of Inverness-shire, Scotland. The Roy flows through the valley which is remarkable for having in each side 3 regular and distinctly formed terraces, the margins of a former loch.

Glens Falls, city of New York state, U.S.A., in Warren co., 55 m. N. of Troy, situated on the Hudson R. and connected with Champlain Canal. It has a descent of about 50 ft between cliffs of black marble. There are valuable quarries and Portland cement works, also paper and lumber milling; clothing, food products, metal products, chemicals, and machinery are manufactured. Charles Evans Hughes was b. here. It is an old Quaker settlement of c. 1763. During the revolution of 1780 it was burned to the ground, but was rebuilt. Pop. 19,610.

Glenilt, glen in N. Perthshire, Scotland, watered by the Tilt. It extends from Blair Atholl for a distance of 13 m. At its upper part it is hemmed in by high mts, and numerous torrents flow down their slopes through the glen. The rock formation here is geologically interesting; white, grey, and green marble have been quarried.

Gliding, art of flying in an aeroplane, without the use of engines of power, by taking advantage of the natural currents of air and the law of gravitation. The first principle involved in this kind of flight is that by the skilful arrangement of planes on a flying machine its fall can be retarded in such a way as to make the fall itself a means of propelling the aeroplane over a long distance. The plane with power behind it can also take advantage

of the law of gravitation in this manner. But whereas the power machine can elevate the front of its planes and, by driving against the wind, climb to a desired height, the machine without power must find other means. Here use is made of the second principle, which is based on the fact that the air currents in passing over uneven or hilly ground follow the contour of the land over which they pass, and though, in relation to these currents, an aeroplane may be falling all the time, the breeze that blows up the side of a long and fairly steep hill actually lifts to a greater height any plane floating with it. Skilful manipulation of the plane enables the glider to take advantage of these 2 principles to cover long distances. By alternately 'soaring,' or making use of the lift of these upward currents, and 'gliding,' or using the pull of gravitation as a means to cover the distance, the airman can now remain in the air for an almost indefinite period. The art of G. was an important part of the development of flying, and continues to afford useful information. Long before the progress of the motor car turned the attention of inventors and engineers to the possible uses of very powerful engines in very small compass, experiments were being made in heavier-than-air flying machines which, starting from high ground, should fly a long distance before landing. Among the most successful pioneers in this form of experiment were Otto Lillenthal, O. Chanute, Percy Pilcher, and the Wright brothers, whose work in G. led directly to the achievement of the powered aeroplane (see **AEROPLANE**). Gliders, or motorless aircraft, towed by other aircraft, and used to carry 'airborne' troops and stores, were much developed in the Second World War. The Brit. 8-ton Hamilcar glider (designed in 1941), which was used with great success by the Army Air Corps in the invasion of Europe in 1944, was then the largest wooden aircraft in the world. It had a wing-span of 110 ft. The fuselage formed a cabin which was nearly 26 ft long, 8 ft wide and 7½ ft high. It could transport a Tetrarch Mk IV tank with crew, a T19 Locust tank, a 17-pounder anti-tank gun, a tractor and angle-dozer (used in aerodrome construction), main portions of a bulldozer, 2 armoured Scout cars, a self-propelled Bofors-gun, or a variety of other loads. It required a 4-engined bomber to serve as its tug, Handley-Page Halifaxes being used for the purpose. When fully loaded this transport glider weighed 36,000 lb., or 16 tons, and the glider-tug combination could cruise at 150 m.p.h.

G., which has also contributed materially to the study of aerodynamics, was particularly advanced in Germany after the First World War. It also took root in England, where many amateur G. clubs were formed. A Brit. G. Association was also estab., which is now affiliated to the Royal Aero Club. Notable G. records are those of Fl./Lt. R. C. S. Forbes (194 m. in 6 hrs 7 min.) and F./O. G. Archibald (194 m. in 5 hrs 42 min.) at

Fassburg, Germany (Brit. zone of occupation), in 1948, and Philip Wills, Hatfield to Truro, 1 May 1949.

Glinka, Mikhail Ivanovich (1804-57), Russian composer, b. on his father's estate at Novospasskoye, was privately educ. and cultivated music as an amateur, picking up lessons casually, including some from Basili during a long visit to Italy in 1830-3 and afterwards from Dehn in Berlin, where he had his first systematic instruction. But he had great natural gifts and had already written a miscellany of works, including numerous piano pieces and songs. With his 2 operas, *A Life for the Tsar*, 1836, and *Russian and Ludmila*, 1842, he freed Russian opera from Ger. and It. influences and at the same time, especially in the latter, introduced harmonic innovations that were to bear fruit in the work of nearly all the later nationalist Russian composers. No other work of his is of equal importance, though the orchestral *Kamarinskaya* is very characteristic; but he wrote a vast amount of music for one who was trained so late, including over 70 songs, and d. comparatively early. His 2 *Spanish Overtures* show that he was interested in other than Russian national music.

Glisson, Francis (1597-1677), physician, b. Rampisham, Dorset. He graduated M.D. Cambridge in 1634 and 5 years later was appointed Regius prof. of physic there, an office he held until his death. He was one of the original members of the Royal Society. His first work, *De Rachitide*, 1650, was one of the best early descriptions of rickets; likewise his *De Hepate*, 1654, was the best account of the anatomy of the liver up to its time. In his *Tractatus de Ventriculo et Intestinis*, 1677, he introduced the idea of irritability as a specific property of all human tissue. He was president of the Royal College of Physicians, 1667-9. See J. Aikin, *Biographical Memoirs*, 1780, pp. 326-38.

Gliwice (Ger. Gleiwitz), tn of Poland, in Katowice prov., on the R. Kłodnica at the end of the G. canal, 18 m. W. of Katowice (q.v.). It dates from the Middle Ages, and has coal-mines, iron and steel works, and manufs. of chemicals, machinery, textiles, glass, and paper. Pop. 128,000.

Globe, tn of Arizona, U.S.A., situated in Gila co., of which it is the cap., and 90 m. N. of Tucson. It is the centre of a copper mining dist., and stands third in the U.S.A. for production. Gold, silver, asbestos, mercury, manganese, vanadium, and tungsten are also found. Pop. 6400.

'**Globe**' (or 'The Globe and Traveller'), started in 1803 as a 6d. paper by a syndicate of publishers primarily with the object of securing to themselves an advertising medium. In 1842 it took over its old rival the *Courier*. Later it was changed into a Conservative paper, its new proprietors, including Sir Stafford Northcote, lowering the price to 1d. Afterwards it became the property of one of its editors, Capt. (subsequently Sir George) Armstrong. In 1907 it was

sold to Sir Hildebrand Harmsworth; ceased pub. soon after the First World War.

Globe-fish, marine fish of the family Tetrodontidae. They are so named because of their power of distending a gullet sac with air, and thus assuming an almost globular form. Most of the species are found in tropical and sub-tropical seas, where they feed on corals, molluscs, and crustaceans, for which their hard, beak-like snouts are peculiarly adapted. Some of them are highly poisonous, and they are armed with small spines; they vary in size from a few in. to 2 ft., and are nearly always brilliantly coloured. The Diodontidae, or porcupine-fishes inflate themselves in much the same way as the G.s and are sometimes called by this name.

Globe Flower, or Golden Ball, popular names of the genus *Trollius*, perennial erect plants of the family Ranunculaceae. The best-known Brit. species is *T. europaeus*, which has pale yellow globular flowers.

Globe Theatre, name of 3 London theatres: 1. Famous Elizabethan theatre, built on Bankside in 1599, where the plays of Shakespeare and his contemporaries were performed. It was burnt down in 1621, rebuilt, and finally dismantled in 1649. For further details see THEATRE.

2. Theatre opened in 1868, in Northumberland Street, Strand, the first production being H. J. Byron's *Cyril's Success*. Plays by Pinero, Jerome K. Jerome, Sydney Grundy, and Robert Buchanan were among those performed there. In 1897 Sir John Hare (q.v.) took possession of the theatre, and during his tenancy *The Three Musketeers*, *The Gay Lord Quex*, and other well-known plays were produced. The theatre was demolished in 1902.

3. Opened as the Hicks in 1906, the present G. T. stands in Shaftesbury Avenue, with an approximate seating capacity of 900. Plays performed there include *Fallen Angels*, 1925, and *Nude With Violin*, 1956, by Noel Coward; Pinero's *Trelawny of the Wells*, 1926; *For Services Rendered* by Somerset Maugham, 1932; *The Morning Star* by Emlyn Williams, 1941; *While the Sun Shines* by Terence Rattigan, 1943-4; *The Lady's not for Burning* by Christopher Fry, 1949; *King Round the Moon*, trans. by Fry, 1950.

Globes, spherical maps representing the appearance of the heavens or the earth. A terrestrial globe naturally conveys a far more accurate impression of the relative areas of land and water and of the true position of any one place with regard to another than can possibly be given by a flat projection, where angles and distances are of necessity distorted. A globe reproduces in miniature the spherical shape of the earth, only no account is taken of the flattening at the poles. It is constructed as follows: Layers of paper are pasted on to a wooden or iron matrix. At the poles are metal meridian circles

through which pass the ends of the central axis round which the globe is made to revolve. The meridians and parallels are drawn on a composition of whiting, glue, and oil with which the sphere has been coated. Great care is needed to attach the gores or segments (from 12 to 24 in number) on which the map is already printed, to the globe. Formerly the preparation of a globe was a laborious process, as it was painted by hand or else engraved on copper. For schools and libraries a globe is made to rotate round its own axis in a somewhat larger metal meridian, which in its turn is fitted into a horizontal wooden ring fastened to a stand. The gores, it should be added, are now prepared on strictly mathematical principles. A normal globe has a diameter of 12 or 18 in. At the Paris Exhibition of 1889 an interesting globe was on view, which was an exact model of the earth, only a million times smaller. Thus the equator measured 40 metres, which represented 40,000 kilometres, the actual circumference of a great circle. Such a sphere would make the calculation of distances an easy matter. Sometimes a globe is embossed to show the highlands and lowlands. Compound G. are also made, the celestial globe being of glass and enclosing the terrestrial. Accessories, such as a flexible quadrant to measure distance between any 2 places, a compass usually put below the sphere, and an hr-circle round the N. pole, are indispensable if the globe is to be used for solving geographical and astronomical problems. On the celestial sphere the stars are drawn as it is calculated they would appear if looked at from the centre of that sphere, the relative positions and distances of the stellar bodies being exactly the same as they appear in the actual heavens.

Celestial G. seem to have been made first. Thus they were understood in the days of the Venerable Bede, and some were contrived by Gerbert of Aurillac (929). The oldest of the Arabian celestial spheres is now in the Florence museum, and another, dated about 1225, can still be seen at Vellotri. A certain scientist of China, Ho-shing-tien, devised such a sphere as early as 450, whilst to turn to Gk civilisation the celestial sphere of Hipparchus (c. 150 bc) was still on view in the great library of Alexandria in Ptolemy's day. In the Naples Museum is one which is believed to be as old as the 4th cent. bc. The Laon and Nuremberg terrestrial G. are contemporary with Columbus, who was certainly familiar with similar maps (c. 1492), and there exist reliable illustrations of the terrestrial sphere of Crates of Mallus (d. 145 bc), dividing the earth, by an equatorial and a meridional ocean, into 4 quarters, thus anticipating the discovery of the Americas and Australia.

Globigeriana, name given to a genus of Foraminifera, whose shells are found in great abundance on the floor of the deep ocean, particularly in warm seas. They are of a pelagic, limy formation, having

many chambers covered with pores, out of which streams protoplasm. As they die, their shells sink to the bottom and form the calcareous deposit known as the G. ooze. See FORAMINIFERA.

Globular Cluster, a dense group of stars, larger than a galactic cluster (see GALAXY). The G. Cs. are at distances from the earth varying from 5 to over 100,000 light years and are equally distributed about the Milky Way (see GALAXY), forming an enormous flattened spheroidal group more than 150,000 light years in diameter and 120,000 light years deep. The best-known G. C. visible with the naked eye is in the constellation (q.v.) of Hercules.

Globular Projection, see MAPS.

Globularia, family Globulariaceae, genus of dwarf perennial herbs and shrubs of the Mediterranean region, of which *G. cordifolia*, *G. vulgaris*, Blue Daisies, and others are grown in rock gardens, have blue flowers in rounded heads.

Glogów, tn of Poland, in Zielenia Góra prov., on the Oder (q.v.), 32 m. S.E. of Zielenia Góra (q.v.). It was the cap. of a principality 1252-1506, was taken by the Swedes in 1642, and passed to Prussia in 1745. It was very badly damaged in the Second World War, at the end of which the Ger. pop. left. There is an electrical industry. Pop. 20,000.

Glossach Falls (370 ft), in SW. Ross and Cromarty, Scotland. Falling sheer for 300 ft, the waters of Ault a Chlomaich then burst into a cloud of spray before completing the last 50 ft of their descent.

Gloss (Gk *glossa*, tongue, language) was originally an explanation of merely verbal difficulties in a literary work (such as words taken directly from a foreign tongue, provincialisms, obsolete and technical terms, dialect words, or those used by the author with some exceptional meaning) inserted between the lines or written in the margin beside the passage. The earliest G.s (Gk, Lat., and Heb. MSS.) were interlinear, later they became marginal, and finally developed into a running commentary on the whole book. *Glossae* came to be applied to similar explanatory renderings of words or passages in any dictionary or annotated work, hence our word 'glossary.' In a sinister sense G. may mean a sophistical interpretation. Collections of G.s (*glossaria*) were very common in the Alexandrian period (4th cent. bc). Among the chief Gk *glossatores*, or writers of G.s, are Philotas of Cos (3rd cent. bc), Zenodotus, Aristophanes of Byzantium, Aristarchus, Apion, Hesychius of Alexandria (4th cent. ad), Photius (9th cent.), Suidas (10th cent.), Zonaras (12th cent.), and Favorinus, a Benedictine (d. 1537). Most of the Rabbinical writers have done for the Heb. text what these did for early Gk texts. The chief *glossatores* of the Lat. Vulgate are Walafrid Strabo (9th cent.), author of the *Glossa Ordinaria*, and Anselm of Laon (c. 1050-1117), author of the *Glossa Interlinearis*, printed in the Vulgate ed. of 1480.

In Rom. Law G. means an explanation, not merely of one word, but of the whole

intent of the law. The medieval commentators on the texts of civil and canon law were called *glossatores*, the best known being Irnerius (12th cent.) and Accursius (13th cent.), whose G.s on the 6th-cent. Justinian code (*Corpus Juris Glossatum*) ranked almost as high as the code itself. The first glossarium to canon law was that of J. Seneca (Teutonicus), 1212, printed in connection with the *Decretum Gratiani*, 1584. Similar collections were made later of the decretals of Gregory IX, the *Liber Sextus*, the *Clementines*, and the *Extravagantes*. The monumental *Corpus Glossariorum Latinorum* of G. Goetz was begun in 1888. See also DICTIONARY.

Glossop, John Collings-Taswell (1868-1934), vice-admiral. Served in the Australian Navy in the early part of the First World War. He was in command of the Australian cruiser *Sydney* when she sank the Ger. raider *Emden* in Nov. 1914.

Glossop, bor. and tn of Derbyshire, England, on the fringe of the Peak national park. Industries include paper milling, textile manuf., printing and finishing, and clothing and rubber manuf. Hadfield lies in the bor. Pop. 17,770.

Glossopteris, genus of fossil plants possessing tongue-shaped leaves with reticulate venation found in the Permo-Carboniferous rocks of India, Australia, South Africa, South America, and Antarctica. The G. flora of the S. hemisphere was remarkably different from the contemporary flora of Europe and North America.

Glottis, see LARYNX.

Gloucester, Dukes and Earls of. The earldom of G. was first conferred on Robert (d. 1147), illegitimate son of Henry I. He supported Matilda's claim to the throne and was a patron of learning. Later the earldom passed to the Clares. Richard (1222-62) was 7th earl, and fought on the side of the barons under Henry III till he finally quarrelled with Simon de Montfort. His son Gilbert fought with de Montfort at Lewes (1264), but against him at Evesham (1265). Gilbert, 9th earl (1291-1314), fell at Bannockburn. Thomas of Woodstock (1355-97), youngest son of Edward III, was made duke of G. by Richard II, 1385. From 1386 to 1389 he was virtual ruler of England. He was put to death at Calais by order of Richard II on a charge of treason. Humphrey (1391-1447), known as the good Duke Humphrey, was the youngest son of Henry IV, brother of Henry V, with whom he fought at Agincourt (1415). He was Protector during the minority of Henry VI. He quarrelled with the Beauforts and opposed Henry's Fr. marriage. He was arrested on a charge of high treason, 1447, and d. a few days later. He was a munificent patron of literature and the Church (see life by K. H. Vickers, 1907). Richard, son of the duke of York and brother of Edward IV, became Richard III (1483-5). The last but one to bear the title was Frederick William (duke of G. and Edinburgh, 1776-1834), nephew of George III. The present holder of the

title is Henry William Frederick Albert, 3rd son of George V. He was b. 31 Mar. 1900, and was known as Prince Henry until 1928, when he was created a duke. He entered the King's Royal Rifle Corps in 1919 but later joined the cavalry. He married, 1935, Lady Alice Montagu-Douglas-Scott, daughter of the 7th earl of Buccleuch, by whom he has 2 sons. He was governor-general of Australia, 1945-7.

Gloucester, Robert, Earl of, see GLOUCESTER, DUKES and EARLS OF.

Gloucester, Robert of (fl. 1260-1300), Eng. chronicler, probably a monk of G. Abbey. He wrote in verse a *Chronicle of England* from the earliest times down to the reign of Henry III. See selections from his *Chronicle* in G. Sampson's *Cambridge Book of Prose and Verse*, 1924; and B. D. Brown, *Robert of Gloucester and Life of Kenelm*, 1926.

Gloucester: 1. Cap. of Gloucestershire, England, an inland port, city, and co. bor.



British Railways

THE FIFTEENTH-CENTURY TOWER
OF GLOUCESTER CATHEDRAL

of note; also a co. of itself, with its own sheriff. It is built on a slight declivity, sloping towards the Severn at the farthest downstream crossing of the riv., and is sheltered by the Cotswold Hills. G. was formerly *Glevum* (later *Claudia Castra*), an important Rom. tn and second city of Rom. Britain. To-day its prin. building is the cathedral. Foundations of a double monastery were laid at G. in 681, but it was not until 1541 that the monastic church became a cathedral. The fabric dates from the late 11th cent.;

from inception to the end of the 15th cent. it has a hist. of rebuilding and repairs, but the cathedral now stands much as it was in about 1490. Dominating the city is the splendid Perpendicular tower, dated mid-15th cent., but the oldest part of the cathedral is certainly the crypt, which may be prior to the main body of the Norman work. The S. transept is the earliest Perpendicular structure in England; G. cathedral is rich in splendid examples of this style, the choir and the fan tracery of the cloisters being justly famed. Other places of interest include the 12th-cent. church of St Mary-le-Crypt, the 11th-to-13th-cent. Abbot's House, and the New Inn (1450). G. has sev. schools, 3 endowed and 2 others, a technical college, and sev. modern. It is governed by the mayor, aldermen, and burgesses. Its chief manufs. are aircraft, railway engines, agric. implements, cutlery, etc., and it exports coal, iron, bricks, pottery, salt, malt, and agric. products, carrying on a large trade with the Baltic and other foreign ports. It also has fine ship-building yards, foundries, marble and slate works. The salmon fisheries in the Severn are valuable. The Three Choirs Festival (q.v.) is held here triennially. Some 6 m. from G. lies Prinknash Abbey, occupied since 1928 by Benedictine monks. The original community came from Caldey where the monks had made corporate submission to the Holy See in 1913. A former residence of the abbots of G., the abbey has been much enlarged. G. returns 1 member to Parliament. Pop. 86,400.

2. In Massachusetts, U.S.A., a city and port of entry of Essex co., 32 m. N.E. of Boston. It was founded in 1623, chiefly by settlers from G. in England, whence it derived its name. In 1642 it was incorporated as a tn, and in 1873 became a city. It is governed by a mayor, elected annually. The oldest Universalist church in the U.S.A. is situated in G., founded in 1770. From the beautiful dark granite quarried in the neighbourhood the Woolworth Building, New York, and some gov. offices are built. G. is noted as being one of the most important fishing ports and markets in the world, 6000 men being engaged in the trade. The prin. catches are herring, cod, mackerel, and halibut. G. also has large manufs. of oil, glue, sails, isinglass, nets, and olsskins, and is engaged in boat-building. Pop. 24,170, which increases with summer holiday traffic.

3. A city in Camden co., New Jersey, U.S.A., on the Delaware R. It was incorporated in 1868, and is governed by a mayor, elected every 2 years, and by a unicameral council. The manufs. include asbestos, cork and paper products, chemicals, structural steel, lumber, textiles, and gas heaters. It is the site of Fort Nassau (built 1623). Pop. 14,357.

Gloucestershire, co. of the SW. midlands of England, bounded by Worcestershire and Warwickshire on the N., by Oxon. on the E., by Wilts and Somerset on the S., and by Monmouthshire and Herefordshire

on the W. Remains of early Brit. settlements are found in the co., particularly on the Cotswolds, and there is extensive evidence of its importance in Rom. times, when camps were estab. at Cirencester (q.v.) (a station on the Fosse Way, q.v.), and at Gloucester (q.v.), which became the second city of Rom. Britain. The co. is mentioned by name in the A.-S. Chronicle in 1016. The chief antiquities of G. are the celebrated cathedrals of Gloucester and Bristol, and the beautiful abbey church at Tewkesbury; there are also pre-Norman churches at Cheltenham and Cleve. The co. falls into 3 distinct physical divs.: the E. part, consisting of the uplands of the Cotswolds (q.v.); the valley of the lower Severn with its rich pastures, known as the Vale; and to the W. the beautiful and historic Forest of Dean (q.v.), lying between the Wye and the Severn. The R. Severn (q.v.) runs in a SW. direction through the W. half of the co. and is navigable to Gloucester, widening considerably some 10 m. below the city. The Severn Tunnel crosses the estuary some 5 m. N. of Avonmouth. The geology of G. is varied, and includes Gneissic rocks at the S. end of the Malvern Hills, greenstone at Damory, Chardfield, and Woodford, sandy shales and sandstone for quarrying at Dymock, and Old Red Sandstone in sev. places in the Bristol coalfield. Quaternary rocks occur in the co. and the Penarth series is represented. There is an abundance of clay and building-stone. The greater part of the co. is under cultivation, and the moist climate is favourable for root crops. Grain is grown in the Cotswolds, and G. is a famous dairy co., long celebrated for its cheeses and butter, double Gloucester cheeses being formerly made in the Vale. Apples and pears are grown in quantity, and much cider is made. Sheep-farming is also carried on, and woollen cloth, principally broadcloth, is manufactured in the hill dists. Silk-weaving was introduced in the Stroud valley in the 17th cent., but has now d. out. In the 17th and 18th cents. numerous other minor industries sprang up, including flax-growing, and manufs. of lace, rope, sail-cloth, and stockings. To-day Stroud, Gloucester (the co. tn), and Cheltenham are all of some industrial importance, and machinery, tools, paper, furniture, plastics, carpets, pins, watches, aircraft, bricks and tiles, and pottery and glass are produced. Bristol is the largest municipally owned port in the country, and has trading connections with all parts of the world. Celestine (q.v.) is found in the Yate/Goosegreen area; clay, limestone, and sandstone are worked, and the Forest of Dean has some iron deposits and important coalfields. In 1933 land was bought through funds provided by the Pilgrim Trust to preserve the surroundings of the church of Chipping Campden and Old Campden House, and Dover's Hill, a spur of the Cotswolds not far from Chipping Campden, commanding an extensive view over the vale of Evesham, was bought by public subscription

(1928-9). Twelve members are returned to Parliament from 4 co. constituencies and 8 bor. constituencies. Area 1258 sq. m.; pop. 950,500.

Gloucestershire Regiment, The, formerly 28th and 61st Foot. The 28th was raised in 1694, took part in Marlborough's campaigns, and was at the battle of Fontenoy (1746). Thence it went to America on service. As 'The Old Braggs' and 'The Slashers' it gained great renown in the 18th cent. At Alexandria in 1801 it gained the unique distinction of being permitted to wear a badge at the back of the head-dresses as well as in the front. This was in commemoration of the fact that it was attacked by Napoleon's Invincible Legion both in the front and the rear but defeated the legion with great loss. A few years later it was with Wellington in the Peninsula and at Waterloo. The 61st was raised in 1755, and saw service in the West Indies, Maida, Peninsula, and the Indian Mutiny. These 2 regiments were linked in 1881 to form the G. R., which fought in the South African war, 1899-1902. During the First World War it raised 24 battalions, which served in France, Flanders, Italy, Macedonia, Gallipoli, Egypt, Mesopotamia, and Persia. In the Second World War the G. R. fought in NW. Europe and in the Far E. It took part, in Feb. 1945, in the heavy fighting on the Canadian Army's front at the Siegfried and Maas R. defences. Other units of the regiment formed part of the 49th Div., captured Nispen in Belgium on 26 Oct. 1944, and, with the Essex Regiment, won the bridgehead over the R. Mark (Nov. 1944). In the Korean War (q.v.) the 1st battalion made a heroic stand against the Communist forces in the battle of the Imjin R., 23-25 April 1951. For its prowess on this occasion the battalion was awarded the U.S.A. President's Distinguished Unit Citation. See S. D. Daniell, *The Cap of Honour—the Story of the Gloucestershire Regiment*, 1951.

Glove (O.E. *glaf*), covering for the hand, usually with a separate sheath for each finger. The use of G.s was apparently known in the earliest times, and references are made to them in classical hist. In the 8th and 9th cents. the use of G.s was almost universal among the Germans and Scandinavians, though usually of the fingerless kind; but there is no evidence that G.s were in general use in England before the 13th cent. They were first worn by ladies as ornaments, sometimes being made of linen and reaching almost to the shoulder. It was Queen Elizabeth who set the fashion of wearing them richly embroidered and bejewelled. During the Middle Ages the G. obtained a special significance in the symbolic sense, the custom of offering a folded G. as a gage for waging one's law coming into use. Associated with this custom was the use of the G. in a wager of battle, when it was thrown down by the defendant and picked up by the accuser, in open court, signifying a challenge and its acceptance. The manuf. of G.s was not introduced

into Great Britain till the 10th or 11th cent. To-day it is carried out mainly in the areas around Worcester, Yeovil, Westbury, and Woodstock. A speciality of Eng. manuf. is high grade washable fashion G.s made from hair sheepskins from South Africa, Abyssinia, Arabia, and Somaliland, and Eng. G. leathers are now known as some of the finest in the world. Another Eng. speciality is the woolled sheepskin G. made up with the wool inside. A large number of elegant G.s are made in France, mainly from Fr. fine-grain sheepskins and lamb skins, and these are usually described as kid. In the U.S.A. the centre of the G. industry is at Gloversville, New York State. Manuf. is also carried out in Belgium at Brussels and in W. Germany. Since the end of the Second World War fabric G.s made from cotton or nylon have gained in popularity. See also LEATHER.

Glover, Richard (1712-85), poet, b. London, son of a merchant. Educ. at Cheam, Surrey, he was M.P. for Weymouth, 1762-8. He wrote some verses in praise of Sir J. Newton, 1728, and his blank verse epic, *Leonidas*, appeared in 1737 (extended to 12 vols. by 1770). The *Athenaid* (a sequel, 30 vols.) was pub. posthumously in 1788. His works are mostly forgotten now. Others were the tragedies *Boadicea*, 1753, *Medea*, 1761, *Jason*, 1799, and the ballad *Admiral Hosier's Ghost*, 1726, intended to excite the Eng. against Spain. G.'s diary was pub. in 1813. See A. Chalmers, *Works of the English Poets* (vol. xvii), 1810; J. G. Schaal, *Richard Glover, Leben und Werke*, 1900.

Gloversville, city of Fulton co., New York state, U.S.A., 43 m. NW. of Albany. Noted for the manuf. of gloves and mittens and glove and shoe leather; also textile, wood, and paper products, cement blocks, and machinery. Pop. 23,630.

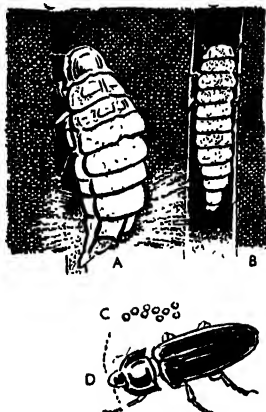
Glow Discharge, visible electric discharge (q.v.) from electrodes at high potential, usually in tubes at very low gas pressure.

Glow-worm, name applied to various luminous beetles of the sub-family Lampyridae. There are about 500 species. They are nocturnal in habit, and found chiefly in warm countries. The phosphorescent structure is on the abdomen, and the lights apparently serve as love-signals between the sexes, to light the path of the beetle and frighten off foes. The most common European variety is the *Lampyris noctiluca*. The female is usually wingless; the males, eggs, larvae, and pupae are all luminous. In this variety alone the female's light is more brilliant than the male's. Other species are *Lampyris splendidula*, the West Indian *Photuris* and *Pygolampis*, Amer. *Pyroctomena*, *Pyrocaelia*, *Luciola*, *Lamprocera*, and *Photuris pyralis*. See FIREFLY; PHOSPHORESCENCE.

Gloxinia: 1. Family Gesneriaceae, genus of South Amer. perennial herbs, with knobbed roots, bearing tubular varicoloured flowers, not unlike those of the

florist's G. *G. maculata* and varieties are grown under stove conditions.

2. G. of florists are rhizomatous plants of *Sinningia speciosa* and its hybrids; native of Brazil, and of the family Gesneriaceae. They are popular greenhouse and indoor plants, with large, trumpet-shaped flowers, richly coloured and marked, above big ovate hairy leaves; and may be raised annually from seeds or cuttings of leaves or stems, while the tubers are often rested in cold weather months to start into growth again in spring or early summer.



GLOW-WORM

A, female; B, larva; C, eggs; D, male

Glubb, Sir John Bagot (1897-), Eng. soldier. After service in the First World War he was political officer in Iraq, working among Arab tribes on the Saudi-Arabian frontier. In 1932 he was transferred to Transjordan and put in command of the Arab Legion. His name will always be associated with the formation of the 'desert patrol' and system of forts on the Transjordan-Palestine border. During the Iraqi campaign of 1941 (see IRAQ) he was attached to the Transjordan Frontier Force and took part in the operations in the Habbaniya area; and, in the Syrian campaign later in the year, he took part in the operations in NE. Africa and at Palmyra. Known among the Arabs as Abou Hanik or 'Father of the Jaw.' In 1956 he and other Brit. officers of the Arab Legion were dismissed by King Hussein of Jordan. On his return to England he was knighted and promoted lieutenant-general. He wrote *The Story of the Arab Legion*, 1948; *A Soldier with the Arabs*, 1957.

Glubozyce (Ger. Leobschütz), tn. of Poland, in Opole prov., 25 m. S. by W. of Opole (q.v.), near the Czech border. Until 1742 it was in the Bohemian principality of Jägerndorf, and it was in

Upper Silesia (q.v.) until 1945. Pop. 10,000.

Glucinum, see BERYLLIUM.

Gluck, Christoph Willibald (1714-87), Ger.-Bohemian composer, son of a forester, b. Krasbach, Bavaria, but taken back early to Bohemia when his father returned there to change his employ. G.'s nationality is uncertain, and he never seems to have known either German or Czech perfectly, which may be one of the reasons why he took so easily to setting It. and Fr. words in his operas, which are almost his whole output. He went to school at Kamenice and Chomutov, and in 1732 was sent to Prague, where he picked up musical knowledge as a pupil of Cernohorsky; in 1736 he went to Vienna into the service of Prince Lobkowitz, a boy of 12; but in 1737 he was taken to Italy by Prince Melzi, and there he studied for the first time systematically with G. B. Sammartini, mainly an instrumental composer of modern tendencies who did not teach him much counterpoint. G.'s experience of opera was wholly Italian, for even in Prague and Vienna he had heard nothing but works set to librettos by Metastasio and similar poets. He was thus influenced by such masters as Hasse and Vinci, and his first operas were in their style, the earliest, *Artaserse*, *Demetrio*, and *Demofonte*, 1741-2, being resettings of Metastasian books already used by others. He had considerable success at Milan, Venice, Crema, and Turin before he went to London in 1745, where he met Handel, who did not think highly of him. He produced 2 works at the King's Theatre the next year, *La caduta de' giganti* and *Artimene*, also appearing as performer on the musical glasses. In 1747 and again in 1749 he joined Mingotti's opera company as conductor, visiting Dresden and Copenhagen with them and producing new works at the courts there. In the latter year he settled in Vienna and in 1750 married the daughter of a wealthy banker, with the result that he lived without professional employment for the rest of his life. Vienna, Prague, and various It. cities now produced his serious It. operas readily, and from 1755 he also wrote Fr. comic operas, mainly for court performances. It is important to realise that he made his success with works written in the current idiom, not differing from those of such contemporaries as Jommelli and Traetta, except that they were often less solid in workmanship. That he became a 'reformer' of opera only less important than Wagner was due more or less to the accident of his meeting with Angiolini, the choreographer of his ballet *Don Juan*, 1761, and more particularly with Calzabigi, the librettist of *Orfeo ed Euridice*, 1762. The latter's influence had a great deal to do with G.'s decision to do away with superficial vocal display, music unsuited to the plot and characters, and outworn conventions generally (although the artificial male contralto was still retained for the hero in

Orfeo), and later, in the Fr. 'reform' works, the traditional ballet; but it must not be supposed that G. never looked back after *Orfeo*, which was followed by relapses into the earlier style. The It. *Alceste* followed in Vienna in 1767, and *Paride ed Elena* in 1770, both with Calzabigi as librettist. The first of the great Fr. operas was *Iphigénie en Aulide*; G. visited Paris in 1773 and the work was produced in 1774, followed by the first Fr. version of an earlier work, *Orphée et Eurydice*, less than 4 months later. G. aroused great enthusiasm, but also the opposition of the partisans of It. opera and of Piccini, whom they saw fit to oppose to G., much against the will of either. The Fr. *Alceste* followed in 1776, *Armide* in 1777, and *Iphigénie en Tauride* and *Echo et Narcisse* in 1779. The last years were spent in comfortable retirement but in poor health, and G. d. from a stroke in Vienna.

Glucose, see DEXTROSE.

Glue (Low Lat. *glus*, glue), impure gelatine, used as an adhesive, for sizing, as an emulsifying agent, as a binder, and for printing, etc. The 3 main types are made from bones, waste skin from tanneries, and fish residues. Bones are crushed and degreased, either by solvents or by thermo-mechanical means, and the G. extracted by alternate treatments with low pressure steam and hot water. The quality of the G. falls as extraction proceeds. Good quality tannery waste is used chiefly for gelatine (q.v.), and the lower-valued materials used for G. include scrapings from the insides of skins (fleshings), and ears, tails, etc. They contain lime when received, which must be washed out and the skins neutralised with acid. The G. is extracted in sev. stages by heating with water at temps. from 80° C. to 100° C. After all the gelatine has been extracted from high-quality skin wastes they are used for G. manuf. by repeated extraction with hot or boiling water. Both bone and skin G.s may then have preservatives, bleaching agents, etc., added, and they are evaporated. The concentrated liquors are set and dried in the form of sheets, cubes, or small beads (pearl), and marketed in this form or as powder after grinding. Very little G. is now sold in cakes. Pearl, cube, and ground G.s are blended before sale. G. is now graded by accurate physical tests, the old names such as Scotch G., Salisbury G., etc., being little used. Much G. is now sold as undried jelly or as a non-gelling liquid prepared by the addition of chemicals. Fish skin and bone is treated chemically, washed, extracted in stages with hot water, and evaporated. It is sold as a non-gelling liquid. See also ADHESIVES; SYNTHETIC RESINS.

Glutathione, see HOPKINS, SIR FREDERICK GOWLAND.

Gluten, one of the most important constituents of wheat flour, may be obtained from it by kneading a paste of the flour under water in a linen bag, until no further milkiness is produced. The grey,

tenacious, tasteless substance remaining consists mainly of G., which may be separated into gliadin, which is soluble, and glutenin, which is insoluble in 70 per cent alcohol. Oats, rye, and barley scarcely contain any G., whereas the proportion in wheat varies from 10 per cent in cold to 15 per cent in hot climates. It has a high food value, and contains from 15 to 18 per cent of nitrogen in addition to carbon, hydrogen, oxygen, and sulphur. G. plays an important part in the manuf. of bread by emmeshing the carbon dioxide gas in minute cells in the dough, at the same time allowing the dough to rise, thus rendering wheaten bread lighter than that prepared from rye and other flours.

Glutton, or Wolverine (*Gulo gulo*). The former name is somewhat of a misnomer, since the animal is no greedier than are the other species of the same genus. It belongs to the weasel family and has most of the characteristics of that family. It resembles somewhat the martens, being from 2 to 3 ft long, plus a bushy tail of about 8 in. It has blackish-brown fur, with a broad band of chestnut fur running along each side of it. It is found principally in the Arctic regions of North America, especially in Alaska and round the Mackenzie R. The flesh is useless, but the furs are made into hearth- and carriage-rugs.

Glycas, Michael (mid-12th cent. AD). Byzantine historian noted among the historians of the E. Empire for the terseness and clarity of his style. His writings include poetical and theological works, and also an unimportant chronicle of world hist. down to 1118.

Glycerol (Glycerine), or, in chemical terminology, Trihydroxypropane ($C_3H_8(OH)_3$), is an essential component of the fats and oils of both vegetable and animal origin. These fats and oils are mixtures of the glyceryl esters of the fatty acids, and on treatment with hydrolysing agents (e.g. alkalis, superheated steam, etc.) they are split into either G. and the alkali salt of the acids, or G. and the free fatty acids. A similar decomposition is effected in the intestine, the G. and fatty acids being absorbed separately and again reconverted into fats. The prin. sources of G. are stearin (the main constituent of the harder fats such as beef and mutton tallow), palmitin, present in palm oil and other oils, and olein, which is found in the soft fats and oils, including lard. G. is prepared almost entirely as a by-product in soap manuf. The fat is treated with alkalis, and the soap (i.e. the alkali salt of the fatty acid) is salted out; in the residual lye is found all or most of the G. present in the original substance. This lye is filtered from impurities, concentrated *in vacuo*, and then distilled under reduced pressure. Chemically pure G. is obtained by diluting the crude product with water and removing by distillation the acid products that pass over at 100–110° C. The temp. is gradually raised to 170°, when the G. distils over. G. is a colourless, viscid liquid with

a sweet taste which crystallises at low temps. Sp. gr. 1.1320, boiling point 290° with decomposition. On rapid heating it loses water with the formation of acrolein. G. is used in enormous quantities for the preparation of nitro-G. and explosives related to the latter, e.g. dynamite. It is also employed to a large extent in dyeing, calico-printing and dressing, in the manuf. of leather, and in pharmacy and medicine generally. Because of its non-drying and antiseptic properties it is used as a lubricant for watches, etc., and since it does not freeze when mixed with water it forms a valuable filling for gas meters and motor-car radiators. It is used extensively as a humectant in the manuf. of pliable wrapping film—regenerated cellulose—similar to a plastic but not accepted as such, e.g. cellophane and rayophane.

Glycocoll, or **Glycine**, is aminoacetic acid ($\text{CH}_2\text{NH}_2\text{COOH}$), a sweet, crystalline body (melting point 232° C.), and was first obtained from the products of the action of sulphuric acid on glue, but is more conveniently prepared by the action of ammonia on monochloroacetic acid. It forms compounds with both acids and bases.

Glycogen, or **Animal Starch** ($\text{C}_6\text{H}_{10}\text{O}_5$)_n, discovered by Bernard in 1857, is found in the livers of animals, where it is stored as a reserve material. It is a white tasteless powder, giving a red colour with iodine, and is converted by ferments into maltose and by acids into glucose. *Paté de foie gras* and oysters contain a considerable amount of G.

Glycol, or **Ethylene Alcohol** ($\text{CH}_2\text{OH}\cdot\text{CH}_2\text{OH}$), first and best known of the series of dihydric aliphatic alcohols. It is prepared from ethylene dibromide by boiling with potassium carbonate solution, and is a sweet syrupy hygroscopic liquid, boiling at 197° C., and freezing to a crystalline solid at -17° C. It is produced on a large scale from petroleum cracking (q.v.), and is used in the manuf. of high explosives and as an anti-freeze.

Glycon of Athens, Gk sculptor of the 1st cent. BC, famous for the colossal statue of the Farnese Hercules found in the baths of Caracalla in 1540, with the inscription 'Glycon the Athenian made it' engraved on the rock supporting it. The statue is a copy of one by Lysippus (q.v.).

Glycosaris, genus of rutaceous, tropical shrubs, of which *G. citrifolia*, the Jamaica orange, and *G. pentaphylla* are the best known.

Glycosuria, literally 'sweet urine'; excretion of sugar (glucose) in the urine. Normally the sugar which filters through the glomeruli of the kidneys (q.v.) is reabsorbed into the blood in the tubules of the kidney and the urine is thus rendered sugar-free. Sometimes after an excess of carbohydrate the level of the sugar in the blood rises to such a degree that the overspill through the glomeruli is too great for the tubules to cope with and a certain amount passes on in the urine to cause a temporary, physiological G. In certain abnormalities the kidney tubules are incapable of dealing with normal blood

sugar levels, with the result that a persistent G. occurs, unless the dietary carbohydrate is curtailed. This condition, known as renal G., is harmless as a rule. In diabetes mellitus (q.v.) the blood sugar level is constantly high in the untreated case, with the result that there is a continued overflow of sugar in the urine. G. should always be investigated to exclude diabetes.

Glyders. Glyder Fawr (3279 ft) and Glyder Fach (3262 ft), mts of North Wales, N. of Llanberis Pass (q.v.). On their N. side they are precipitous and attract the rock-climber.

Glyn, Elinor (1864-1943), Brit. novelist, b. Jersey, youngest daughter of Douglas Sutherland, a brilliant Toronto engineer who d. of typhoid while at work on the Mont Cenis tunnel. She spent part of her youth in Canada, her grandmother, a true survivor of the *ancien régime*, exerting a strong influence on her upbringing. Her husband, Clayton G., she describes as 'instinctively the perfect grand seigneur,' and she modelled her fictional heroes upon his kind. Novels flowed from her pen for 30 years. Her earliest was *The Visits of Elizabeth*, 1900—said to have been built up on her diary—which at once made her name. The best known, however, was *Three Weeks*, 1907, and the best designed *The Career of Katherine Bush*, 1917. Later novels were *Man and Maid*, 1925, and *The Price of Things*, 1930. *Romantic Adventure*, 1936, is an autobiography. See life by A. Glyn, 1955.

Glyncorrwg, urb. dist. of Glamorgan, Wales, situated 8 m. N. of Port Talbot, with coal mines. Pop. 10,000.

Glyndebourne Festival Theatre, founded in 1934 by John Christie, C.H., on his estate at Glyndebourne, near Lewes, Sussex. Opera performances of a high standard are given, notably of Mozart. The theatre is made accessible to London opera-goers by a special train service.

Glyptodon, name of a genus of fossil armadillo-like edentate mammals found in the Pleistocene deposits of South America. They are characterised by their great size and by thick, solid carapaces, which in some cases are nearly 6 ft long; the head is sheathed in bony plates, so also is the long tail.

Gmelin, name of a distinguished family of Ger. scientists:

Johann Georg G. (1709-55), b. at Tübingen. In 1749 he was appointed prof. of botany and chem. at Tübingen. He pub. *Flora Sibirica*, 1747-9, and *Reise durch Sibirien*, 1751-2.

Samuel Gottlieb G. (1744-74), nephew of Johann Georg G., b. Tübingen, and appointed prof. of botany in St Petersburg in 1767. He wrote *Historia Fucorum*, 1768.

Johann Friedrich G. (1748-1804), nephew of Johann Georg G., who pub. a botanical dictionary entitled *Onomatologia Botanica Completa*, 1771-7.

Leopold G. (1788-1853), chemist, son of Johann Friedrich G., b. at Göttingen. He studied medicine at Göttingen and

Tübingen, and taught chem. at Heidelberg. He was the discoverer of red postassium prussiate and he wrote many scientific works, amongst which is *Handbuch der Chemie*, 1817-19; this was trans. into Eng., 1848.

Christian, Gottlob G. (1792-1860), nephew of Samuel Gottlieb G., was prof. of chem. at Tübingen, and was also the discoverer of an artificial process for the manuf. of ultramarine.

Gmünd, see SCHWÄBISCH GMÜND.

Gmunden, Austrian tn in the prov. of Upper Austria, on Lake Traun, among some of the finest scenery of the Salzkammergut (q.v.). It is a popular tourist resort, and is known for its pottery. There are salt-mines near by. Pop. 14,000.

Gnat, genus of small dipterous flies of the family Culicidae, very common in marshy dists. There are sev. Brit. species., *Culex pipiens* being the common G. Mosquitoes are included in the family, but are larger in size and bite more effectively.

Gneisenau, August Wilhelm Anton, Graf Neithardt von (1760-1831), Prussian general, b. Schildau, near Torgau, in Prussian Saxony. After studying for 2 years (1777-9) at the Erfurt Univ. he joined an Austrian regiment. In 1782-6 he fought among the Ger. auxiliary troops on the side of England in the Amer. War of Independence. On his return he became a lieutenant in the Prussian infantry, and served in Poland (1793-4). He fought at Saalfeld and at Jena in 1806, and defended Colberg in the following year. His gallantry was formally recognised, and he received the order *pour le mérite*. During the War of Liberation he fought with distinction at Leipzig in 1813, and still further increased his military reputation on Blücher's staff during the Waterloo campaign of 1815. In 1831 he was appointed a field-marshal of the Prussian Army and put down the rebellion in Poland, but he d. of cholera later that year. See lives by G. Pertz and H. Delbrück, 1864-80, and W. von Unger, 1914.

'**Gneisenau**,' one of the 5 Ger. cruisers of Adm. von Spee's squadron at the battle of Coronel (q.v.). A battle cruiser, built on Hitler's accession to power, was given the same name. In the Second World War it was bombed in Kiel harbour by the R.A.F. in 1940-1. In Brest harbour it was bombed on many occasions by allied aircraft, but on 11-12 Feb. 1942, together with the *Scharnhorst* (q.v.) and *Prinz Eugen* (q.v.), succeeded in escaping to Germany, where, however, it was soon put out of action. See NAVAL OPERATIONS IN SECOND WORLD WAR.

Gneiss, geological name (derived from German) given to certain coarsely banded crystalline rocks in which the individual bands can be distinguished with the naked eye. Banded metamorphic rocks in which this is not possible are best termed schists. G.s are metamorphic in origin and arise through the alteration of sedimentary or igneous

rocks either by strong pressure or by the partial transformation of the rock, with the growth of bands of new minerals under the influence of increased temp. and circulating solutions. G.s with prominent lenses or eyes of certain minerals, usually feldspars, are termed *augen G.s*. Many G.s resemble granite in composition. The G.s make up a very large part of the deepest lying portions of the continents. They are well seen in deeply eroded mt chains and in the extensive Pre-Cambrian terrains such as the Canadian and Scandinavian shields.

Gneiss Islands, see HEBRIDES.

Gneist, Heinrich Rudolf Hermann Friedrich von (1816-95), Ger. jurist, b. Berlin. He studied at Berlin Univ., where he took his degree of *doctor juris* in 1838. In 1841 he was appointed assessor to the Kammergericht, or supreme court, and rose to be an assistant judge. In 1844 he became extraordinary prof. of Rom. law at Berlin, and retired from his judicial life in 1850 in order to devote himself to teaching and to politics. He sat in the Prussian Lower House among the National Liberals, and from 1858 to 1893 sat in the Abgeordnetenhaus, or House of Deputies of the Prussian Landtag. He wrote voluminously on political subjects and on constitutional law. His works, many of which have been trans. into Eng., include *Die formellen Verträge des heutigen römischen Obligationen-Rechtes*, 1845, *Adel und Ritterschaft in England*, 1853, *Das heutige englische Verfassungs- und Verwaltungsrecht*, 1857-63, *Budget und Gesetz nach dem constitutionellen Staatsrecht Englands*, 1867, *Zur Verwaltungsreform in Preussen*, 1880, *Englische Verfassungsgeschichte*, 1882, *Das englische Parlament*, 1886, and *Die verfassungsmässige Stellung des preussischen Gesamtministeriums*, 1895. See lives by O. Gierke, 1895, and E. Schiffer, 1920.

Gnidus, see CNIDUS.

Gniezno, tn of Poland, in Poznań prov., 30 m. ENE. of Poznań (q.v.). Its bishopric, the first in Poland, was founded by the Emperor Otto III in 1000. The Polish kings were crowned in its cathedral (which dates from 965, but has been rebuilt and much restored) until 1320. The archiepiscopal see of G. was transferred to Poznań in 1821. There are manufs. of machinery, chemicals, and foodstuffs, and there is a large trade in cattle. Pop. 30,000.

Gnome (Gk 'an opinion'), maxim or aphorism. The Gnomie poets of Greece fl. in the 6th cent. BC, wrote sententious and pithy maxims in the elegiac couplet, and included among their number Theognis of Megara, Solon, Simonides of Amorgos, Xenophanes, and Euanes. The Gnomie spirit is prevalent in a great deal of oriental literature, and was popular among the early Germanic peoples. A fair number of O.E. proverbial sayings, strung somewhat inconsequently together, may be found in the *Exeter Book* and in the Cambridge Cotton MS., and are known as Gnomie verses. Francis Quarles (q.v.), who directly imitated the Gk

Gnomic writers in his *Quatrains*, 1574, is one of the latest writers to use this particular form.

Gnomes (Fr. *gnomes*, Ger. *Gnomen*), in folklore, are spirits of the earth and mt, who are supposed to conceal treasure in their subterranean dwellings. The word is supposed to have originated with Paracelsus, who uses it as synonymous with *Pugnaei*, and derives it from Gk *gnômê*, intelligence. They are of both sexes. The male gnome is generally represented as a tiny, semi-deformed, bearded creature, clothed in a tight, brown tunic with a peaky hood. They are impish and mischievous, but not malignant.

Gnosticism (Gk *gnôsis*, knowledge), widespread spiritual movement which existed before Christianity. It was a kind of religious philosophy which attempted to interpret paganism and Judaism by revealing the deeper knowledge of God which lay in the creeds but which only the initiates (Gnostics) came to perceive and understand. This same spirit of seeking a higher and secret knowledge attacked Christianity in its turn, so that there were Christian Gnostics. For them *gnôsis* meant a secret and higher interpretation of the gospels, distinct from the ordinary beliefs (*pistis*) of the Christian. They claimed that they had received their revelation by a secret tradition, through the disciples, from Jesus Christ Himself, and jealously guarded their knowledge from the uninitiated. They set aside the realistic eschatology of the early Christian Church. As in so many mystic religions, G. is individualistic. The ultimate object was the salvation of the human soul, redeemed from matter by religious knowledge, and not, as in Christian doctrine, by the death of the Saviour. Sacraments of water, fire, food, etc., formed a significant part of the religion. Their teaching was an amalgamation of diverse points from later Gk philosophies and oriental religions. The Divine Demiurges (q.v.), the Creator of the world and the Law-Giver of the O.T., was distinguished from God, the Supreme Being. They believed that all things emanated from the Divine First Cause; that God is separated from man by a hierarchy of aeons (or spirits) and by companies of demons and deities, the highest duty of man being to unite himself with the First Source of Spirit through *gnôsis*. The soul, on its passage to God, must overcome the intervening gulf by means of secret formulas and symbols (see Lipsius, 'Gnosticismus,' in Ersch and Gruber's *Encyclopädie*, republished in a revised form with the title *Der Gnosticismus: sein Wesen, Ursprung und Entwicklung*, 1860.) They distinguished Jesus Christ, as the final and perfect Aeon between man and God, from the visible manifestation of Himself on earth. His life was regarded as a real human life, with which He deliberately associated Himself, or as a 'psychical' creation. The Gnostics divided men into 3 grades, the *Pneumatic* (*pneumatikoi*), or 'spiritual';

the *Psychic* (*psychikoi*), or 'soulish'; and the *Hylic* or 'material' (*sōmatikoi*), which last are doomed to perish. They laid great stress on asceticism or denial of the sensuous world, among early Christians which with them was developed into extremes of self-abnegation or of libertinism, the latter being advocated by the Marcosians and Carpocratians. The teaching of Gnostics varied enormously with the *milieu*, pagan, Jewish, or Christian, in which they worked; but the claim that G. was of divine origin, handed down through a chain of initiated disciples, was common; also the hatred for the material world as necessarily evil, and the preoccupation with salvation through acquiring the *gnôsis* of the privileged few. The 2 leading Christian Gnostics were Basilides and Valentine, both in the 2nd cent., both founders of schools of G. There is a warning in 1 Tim. vi. 20 against a 'false knowledge,' and it has been suggested that this passage refers to some kind of Gnostic speculation which was troubling the early Christians. The only complete Gnostic work that has come down to us is the *Pistis Sophia*, an Egyptian work of the 3rd cent., an ed. of which was pub. by Schwartz and Petermann in 1853. Fragments exist of the works of Bardesanes (q.v.), and there are certain Gnostic *Acts*, bearing the names of Peter, John, Andrew, and Thomas. Tatian's *Diatessaron* was used as late as the 5th cent. in the Syrian Church. The works of the Gnostics, Basilides (*Exegetica* and, perhaps, a *Gospel of Truth*) and Valentine (*Psalms, Homilies, and Letters*), have been lost. The chief authorities on G. are Justin, Irenaeus, Tertullian, and Epiphanius. See A. J. Matter, *Histoire critique du Gnosticisme* (2 vols.), 2nd ed., 1843; A. von Harnack, *Zur Quellencritik der Geschichte des Gnosticismus*, 1873; C. King, *The Gnostics and their Remains*, 1887; H. L. Mansel, *The Gnostic Heresies of the First and Second Centuries*, 1875; G. R. Mead's trans. of *Pistis Sophia*, 1896; W. Bousset, *Hauptprobleme der Gnosis*, 1907; L. Duchesne, *History of the Early Church* (trans.) vol. i, 1911; F. C. Burkitt, *The Church and Gnosis*, 1932; and H. Leisegang, *Die Gnosis*, 1932. The chief attacks upon G. have been collected by Coxé in *Anti-Nicene Fathers* (10 vols.), 1885-96.

Gnu, or Wildebeest (*Connochactes gnou*), name of 2 species of antelope. The South African G. is black in colour with a white tail, and looks like a curious mixture of a buffalo, antelope, and horse. Both sexes have horns, which are cylindrical and curve upwards. The brindled G. or blue wildebeest (*Gorpon taurinus*) occurs from Kenya to the Zambesi and Angola. The G. is a fast runner and in its wild state is very fierce, but may be tamed to do the work of oxen if captured when young.

Gôa: 1. Ter. belonging to Portugal, on the W. (Malabar) coast of India, c. 250 m. S. of Bombay, comprising G. (which includes the tn of Nova G. or Pangim, the cap.) and the Is. of Angediva, São Jorge, and Morcogos. It forms a prov. of

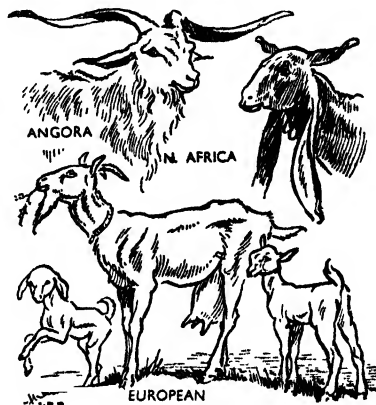
Portuguese India. G. has some 60 m. of coastline. The terrain is hilly, some of the peaks of the W. Ghats (see GHATS) rising to almost 4000 ft. The country is intersected by sev. short but navigable rive., the largest being the Mandovi and the Zuari. Agriculture is the chief industry, rice, mangoes, bananas, coconuts, areca nuts, palm, and spices being among the crops. There are salt works at Nova G., and manganese deposits near Mormugão and at Sanguém. The chief exports are coconuts, fish, spices, salt, copra, and manganese. Nova G. has a good harbour and is the port for the ter.; it is connected by rail with India. The prov. of G. is ruled by a governor-general, assisted by a general council and 3 subordinate councils. In 1510 the Portuguese under Alfonso de Albuquerque captured an area surrounding the old tn of G.; St Francis Xavier visited G., 1542-52, and the prov. became a thriving missionary and trading centre. By the middle of the 18th cent. G. had declined in importance. To-day the Indian Gov. is pressing for the transfer of G., together with other Portuguese possessions (see DAMAN; DIU) in India, to its own authority. Area 1300 sq. m.; pop. 624,200.

2. Tn, on an arm of the sea, formerly an important port and chief tn of G. prov. (see above), and once cap. of Portuguese India. It is noted for its beautiful examples of Portuguese architecture. Among its buildings are a majestic cathedral; the church of Bom Jesus (1594-1603), a perfect example of the Renaissance style, containing the tomb of St Francis Xavier (q.v.); and the chapel of St Catherine, 1551. The new cap. (see NOVA GÓA) was formerly a suburb of the old city. See J. Saldanha, *Historia de Góá*, 1926.

Goalando, tn of E. Bengal, Pakistan, situated at the confluence of the Ganges and the Brahmaputra. The riv. banks in this neighbourhood are very wide apart and constantly shifting. G. has therefore no permanent buildings and the rail-head is commonly moved twice in the year.

Goat, ruminant quadrupeds of the genus *Capra*, forming, with sheep, the 'caprine' section of the Bovidae family. Most G.s, both male and female, have horns and beards, usually more pronounced in the male (called the 'billy'), which is characterised by a strong offensive smell, especially during the rutting season. This fact has given rise to the erroneous impression amongst many people that all G.s have an unpleasant odour. G.s belong entirely to the old world, but many types have been introduced into Canada and the Americas. They are essentially mt-loving animals and sure-footed nimble climbers. In their natural state they are chiefly found in small herds in the mt regions of Europe and Asia. Two species exist in North Africa and one in S. India, but they are not commonly found below the Himalaya. Remains discovered in the Indian pliocene deposits include those of a hornless kind, the

Bucapra daviesi. They feed chiefly on the shoots and leaves of shrubs and trees, and not so much on grass as sheep do. Autumn is the breeding season, the female (usually called the 'nanny') coming into season in Sept. and thereafter at 3-weekly intervals until early spring. The kids are usually produced in the spring, commonly 2 at birth, the gestation period being about 21 weeks. The numerous varieties of wild G. (*Capra hircus*) fall into 3 groups: the European (see illustration), with up-standing ears, the E., with lop ears or Rom. nose, such as the Nubian, and the smaller wool-bearing breeds, such as the Angora. The varieties include the ibex of the Alps, Himalaya, and Arabia; the bezoar G. or paseng (pasang), probab



GOATS

the parent of the common domestic G.; the tur of the Caucasus; the markhor of the Himalaya; the Sp. G.; and the tahr or G.-antelope (*Hemitragus*). G.s are useful for their milk (from which cheese is often made), for their skins (which make good leather), and for their meat. Certain breeds are also useful for their wool, in particular the Angora (mohair) and the Kashmir. The 2 chief varieties of Kashmir G.s (variety *laniger*) are the 'chappoo' and the more common 'changra' which abound chiefly in Tibet and Bokhara. The Angora breed has been introduced into South Africa, Australia, and U.S.A. The member G. from Asia Minor and Tartary, distinguished by its drooping ears, is also bred for its wool.

G. keeping has been practised since earliest times, and the Egyptians, Greeks, and Romans were familiar with the domestic G., which was probably introduced into Britain by the Phoenicians, although it has never gained the footing in Britain as in other parts of Europe and elsewhere. The milk of the hardy Eng. G. is poor in quality and it has therefore

been crossed with other breeds of better yield, a very popular cross being the Anglo-Nubian. Other favoured breeds are the Brit. Alpine, Toggenburg, and Saanen. The milk is chalky white and has no characteristic flavour, provided that the animal is healthy and is kept in hygienic conditions. G.s can be stall-fed, tethered, or, in uninhabited dists, allowed free range, but for good milk production their diet should include concentrates and grain, preferably oats. The kids mature very young and will mate at 6 months, but to produce a good milker a kid dropped in the spring should not be mated until the autumn of the following year. Hornless types have been bred, and the milking strain of some G.s has been improved to such an extent that they will yield for 2 seasons, the usual lactation period being 10 to 11 months. The Brit. G. Society has done much to improve the strain of the domestic G., which has gained considerable popularity in the last two decades and similar work has been done by the Amer. Milk G. Record Association and by the Canadian G. Society. G.s offer a profitable investment to the smallholder, yielding up to a gallon or more of milk a day. Domestically G.s make interesting pets, but on account of their keen intelligence and innate mischievousness they are usually tethered. G.'s milk is much richer than that of cows, containing about double the amount of butterfat, and as G.s never contract tuberculosis their milk needs no pasteurisation. It is thus a safe and valuable human food and is highly recommended for babies and invalids by the medical profession. See the pubs. of the Brit. G. Society; Schreiner, *The Angora Goat*, 1918; C. J. Davies, *Goat Keeping for Milk Production*, 1920; and H. S. Holmes Pegler, *The Book of the Goat*, 1941.

Goat-moth (*Cossus ligniperda*), large moth, measuring about 3 in. across the wings, common in Europe and W. Asia. It is yellowish-grey or brown in colour, with irregular markings of white and black on the upper wings. The pupa is enclosed in a tough cocoon of chips, from which the moth emerges. When the moth is frightened it emits a disagreeable odour like that of a he-goat, whence its name.

Goatsbeard, Purple, see **SALISIFY**.

Goatsucker, name given to *Caprimulgus europaeus*, the common nightjar (see **PICARIAE**), belonging to the family *Caprimulgidae*. It is so called because of an ancient and widespread belief that it sucks the milk of goats and other animals, infecting them with disease; this tradition probably originated from the nightjar's habit of seeking insects on pastures. Other names for this bird are fern-owl, dor-hawk, and night-hawk. It is common in the Brit. Isles during the middle of summer, and is found in various parts of Europe, Asia, and America.

Gobanum, see **ABERGAVENNY**.

Gobbo, see **OCHRA**.

Gobelin, name of a noted Fr. family of dyers. Gilles and Jean G. estab. dye-works at Faubourg St Marcel, on the

Bièvre, about the middle of the 15th cent. The business fl., and before long a tapestry manufactory was added to the estab. The beautiful tapestries produced by this firm became celebrated and in 1662 the works were purchased by Colbert for Louis XVI. Le Brun and other famous painters executed the designs for the royal tapestries. The looms were not worked during the revolution, but towards the end of the 19th cent. a fresh impetus was given to the industry, and a second state-supported estab. was opened at Beauvais. See E. Gerspach, *La Manufacture nationale des Gobelins*, 1892.

Gobi (Mongolian 'desert'), Desert of, enormous desert region of China, Central Asia, its exact limits being still somewhat undefined. The Chinese call it Shamo, Shaho, or Hanhai (riv. or sea of sand). It stretches from the Pamirs to the Khingan Mts, which separate it from Manchuria on the E. China proper bounds it on the S., and Mongolia on the N. The W. part between the Yarkand Daria (Tarim) and Lob Nor is called the Takla Makan desert, and E. of Lob Nor comes the 'Great' G. Other parts with special names are the Ordos G. (N. loop of Hwang-ho), Galbun G. (NW. of Ordos), Alashan or Lian G. (W. of Ordos), Gashun G. (W. of oases from Ansi to Barkul). The surface is in some parts composed of masses of loamy, coarse, shifting sands, in others of rocky masses and mt heights. The great plateau is from 3000 to 5000 ft high. In the E. there is some vegetation, and regular caravan routes cross the desert, the chief being that between Kiakhta and Peking, via Urga and Kalgan. Nomad Buddhist tribes live in the interior, but all permanent settlements are towards the N. Remains of buried habitations and tns have been found in the sandy parts. The streams appear to have no outlet to the sea, the most important being the Tarim. The total area is about 300,000 sq. m., average breadth 400 m. Information has been obtained from the explorations of Ney Elias, Przhevalski (Prjevalski), Kozlov, Grum-Grjimallo, Bobrovsky, Bogdanovich, Plevstov, Sven Hedin, and Sir Aurel Stein. Early explorers were Marco Polo (1254-1324), Gerbillon, the Jesuit (17th cent.), the Spaniard Ysbrand Ides (17th cent.), and Lorenz Lange (18th cent.). See N. M. Przhevalski, *Mongolia*, 1876, and *From Kulja across the Tian-shan to Lop Nor*, 1879 (both trans. by E. Delmar Morgan); Sir F. E. Younghusband, *The Heart of a Continent: Travels in Manchuria, 1884-84*, 1896; Sven Hedin, *Through Asia*, 1893, *Central Asia and Tibet*, 1903, and *Scientific Results of a Journey in Central Asia, 1899-1902*, 1904-7; D. Lattimore, *Desert Road to Turkestan*, 1928; Mildred Cable and Francesa French, *The Gobi Desert*, 1944; and P. T. Etherton, *Across the Great Deserts*, 1948.

Gobineau, Joseph Arthur, Comte de (1816-82), Fr. diplomatist and writer, b. Ville d'Avray, Seine-et-Oise. He wrote for Parisian journals, attracting the attention of de Tocqueville who, as foreign

minister, made G. chief of his secretariat. From 1849 G. filled various posts in the diplomatic service in Berne, Persia, Greece, Brazil, and Sweden, but retired in 1876. His fame rests on his writings; in Germany he was the subject of an ardent cult. He wrote a hist. of the Persians (2 vols.), 1769, a long poem *Amadis*, 1876, and some novels, including *Scaramouche* and *L'Abbaye de Trinquartins*. Some of his best writing is to be found in his *Souvenirs de voyage* and *Nouvelles Asiatiques*, books of exotic short stories. Probably his masterpiece is *La Renaissance*, 1877, a series of dialogues in which the masters of the 16th Renaissance discuss art, letters, statesmanship, and life's lessons. But the work which gave him his chief vogue in Germany is his pseudo-scientific book extolling the Nordic races, entitled *Essai sur l'inégalité des races humaines* (3 vols.), 1853-5. This won him the friendship of Wagner and Nietzsche and profoundly influenced both men. Through his literary descendants G. was one of the founders of the pan-Ger. school of the early 20th cent., and he supplied the pseudo-scientific foundation for Hitler's 'Aryan paragraph' and persecution of the Jews as a non-Aryan race. In keeping with his theories was his best-known novel, *Les Pénitents*, 1874. See R. Dreyfus, *La Vie et les prophéties du comte de Gobineau*, 1905; and life by H. Strentz, 1928.

Gobio (Gk *kōbios*, small fish), generic name of certain teleostean fishes belonging to the Cyprinidae and commonly called gudgeon (q.v.).

Goblin (Fr. *gobelin*; Low Lat. *cobalus*), friendly but mischievous and impish sprite. It is also called hob-goblin, and is supposed to haunt dark corners, for which reason it is used to frighten children.

Gobo, Jap. name for *Arctium lappa*, the burdock (q.v.).

Goby, a species of bony-fish belonging to the order Gobiomorphi. The first dorsal fin consists of a few flexible spines and the second dorsal fin is opposed to the anal fin. The caudal fin is generally rounded. Nearly all G.s are found in the shallow coastal waters of the temperate and tropical ocean. A number of species are found in Brit. waters. They are nearly all small fishes. There are 2 families, the Eleotridae with separate pelvic fins, and the Gobiidae with the pelvic fins united to form a cup-shaped sucker.

Goch, Ger. tn in the Land of North Rhine-Westphalia (q.v.), between the Rhine (q.v.) and the Dutch frontier, 42 m. NW. of Düsseldorf. During the Middle Ages it was noted for its linen. During the Second World War, in the allied operations in early 1945 to reach the Rhine, particularly fierce opposition was encountered on the S. side of the Reichswald near G. The Kalkar-G. road was crossed on 16 Feb., although Ger. forces of the 1st Parachute Army continued to resist strongly in the G. sector. The tn itself, badly damaged, fell to Scottish and Welsh troops on 21 Feb. (see WESTERN FRONT IN SECOND WORLD WAR). The

prin. manufs. are foodstuffs, brushes, and leather goods. Pop. 12,000.

Gössel, see ZALAEGERSEEG.

God, see RELIGION; THEOLOGY; NATURAL THEOLOGY.

'God Save the Queen' (or King), Eng. national anthem, of uncertain origin and authorship, first performed in London in 1745, to celebrate the victory over the Jacobite army at Prestonpans. The attribution of the tune to John Bull (c. 1625), Henry Carey (c. 1697-1743), and others is unfounded. The tune was adopted in France in 1776, and was used as the Dan. and Prussian national air as well as that of sev. minor Ger. states; and it is still the Swiss national anthem. Beethoven introduced it into his *Battle Symphony*, and Weber used it also. The Amer. national air *My Country 'tis of thee* (written by Dr Smith, 1843) is sung to the same tune, as is the Swiss *Rufst Du, mein Vaterland*. In Germany it was sung to *Heil dir im Siegerkranz*! It is sung on all ceremonial occasions throughout the Brit. Empire. Words and music first appeared in *Harmonia Anglicana*, 1742, and in the *Gentleman's Magazine*, 1745. See Percy A. Scholes, *God Save the Queen*, 1954. See also NATIONAL ANTHEMS.

Godalming, municipal bor. of Surrey, England, in the Farnham parl. div., on the R. Wey, incorporated by a charter of Queen Elizabeth I, 1575. Once an important centre of the woollen trade, its manufs. now include knitwear, textile printing, light engineering, and medicinal drugs. The church dates from the 11th cent., with a 13th-cent. spire. The famous public school of Charterhouse (q.v.) was moved to G. in 1872. Here is the 17th-cent. Westbrook House, once home of Gen. James Oglethorpe, founder of Georgia, U.S.A., and close by are Eashing Bridges, dating from the time of King John, and Winkworth arboretum. Pop. 15,110.

Godard, Benjamin (1849-1895), Fr. composer, b. Paris. He studied at the Conservatoire, and shared with Théodore Dubois the prize of the Paris musical competition of 1878 with his dramatic cantata *Le Tasse*. He composed a number of popular songs, such as *Chanson de Florian*, *Ninon*, *Je ne veux pas d'autres choses*; 6 operas, including *Pedro de Zalamea*, 1884, *Jocelyn*, 1888, *Dante*, 1890, *La Vivandière* (left unfinished); the *Symphonie légendaire*, *Symphonie gothique*; and a large quantity of piano and violin pieces and various orchestral works.

Godavari: 1. Former dist. of India, now divided into E. G., W. G., and Kistna dists., in Madras (q.v.) state. The region is watered by the G. R. and its trib., the Sabari, and across the NE. portion lies a range of the E. Ghats (see GHATS). The timber from the forests is of great value, and graphite is mined. Cigars are manufactured from tobacco grown on the *lankas* or is. of the G. R.; sugar, rice, and oil-seeds are also cultivated. The chief tns are Cocanada and Rajahmundry in E. G., Ellore and Bhimavaram in W. G., and Masulipatam in Kistna.

2. Riv. of India, rising 50 m. from the Indian Ocean and flowing E. across the sub-continent through the Deccan (q.v.) from the W. to the E. Ghats, emptying itself into the Bay of Bengal through a wide delta. Its total length is 900 m. It is regarded as a sacred riv., and the festival of *Pushkaram* takes place on its banks at Rajahmundry once in 12 years. The construction of a dam some 20 m. above Rajahmundry began in 1948. By means of an extensive canal system over a million ac. of land are irrigated, and the entire delta is utilised for perennial crops.

Godefroy, Frédéric Eugène (1826-97), Fr. literary historian, b. Paris. He compiled the *Dictionnaire de l'ancienne langue française et tous ses dialectes du IX^{ème} au XV^{ème} siècle* (10 vols.), 1880-1903, which involved a stupendous amount of laborious research and is a standard reference book. Another important work of his is a *Histoire de la littérature française depuis le XVI^{ème} siècle jusqu'à nos jours* (9 vols.), 1859-81.

Goderich, Viscount, see RIPON, EARL.

Godesberg, Bad, Ger. spa in the *Land* of North Rhine-Westphalia (q.v.), on the Rhine (q.v.), 4 m. SE. of Bonn (q.v.). It has a ruined castle, and a rococo mansion, *La Redoute*, in which diplomatic and other receptions are held. Its importance has been increased in recent years by its proximity to the Federal cap. Neville Chamberlain and Hitler met here in 1938, during the discussions which led to the Munich Pact (q.v.). Pop. 54,000.

Godet, Frédéric (1812-1900), Swiss Protestant theologian, b. Neuchâtel. In 1873 he left the state church and became one of the founders of the free evangelical church of Neuchâtel, and till 1877 was its theological prof. G. was a great scholar, and his commentaries are among the most noteworthy of the 19th cent. Besides his commentaries on the Gospel of St John (2 vols.), 1863-5, Eng. trans. 1877; St Luke (2 vols.), 1871, Eng. trans. 1875; the Epistle to the Romans. (2 vols.), 1879-80, Eng. trans. 1880; and Corinthians (2 vols.), 1886-7, Eng. trans. 1886; he pub. *Études bibliques*, 1873-4, *Introduction au Nouveau Testament*, 1893, etc. His son, Philippe Ernest (1850-1922), was a poet and historian of literature.

Godetia, genus of plants, sometimes included with the evening primrose, which it resembles, in the genus *Oenothera*, of the family *Onagraceae*. There are now a score of species, indigenous to W. America. Popular in Britain as hardy anns., which can be flowered outdoor from May to Nov. or in cool greenhouses at any time. Colours are mainly pinks to reds, and pinks to purples and white.

Godfather and Godmother, see BAPTISM; SPONSORS.

Godfrey, Sir Dan (1868-1939), conductor, b. London, son of Dan G. (1831-1903), a military bandmaster, and grandson of Charles G., bandmaster to the Coldstream Guards (1790-1863). He studied music

in London under Lazarus and Alfred Caldicott, and also military band orchestration under John Hartman. He toured South Africa, 1891, for the Standard Opera Company; and became musical adviser and director of music at Bournemouth, 1894. The corporation of that town took over control of music in 1896 when 'Dan Godfrey's Band' was converted into the Bournemouth Municipal Orchestra, the first of its kind estab. in England. G. did much towards building up the modern renaissance of music in England. His services to Brit. music were rewarded with a knighthood in 1922. On his retirement in 1934 he had conducted some 2000 symphony concerts. Pub. his *Memories and Music*, 1924.

Godfrey, William (1889-), Eng. Rom. Catholic archbishop, b. Liverpool; educ. at Ushaw College and the Eng. College in Rome; ordained priest in 1916. G. taught at Ushaw from 1919 to 1930, when he was appointed rector of the Eng. College. In 1938 he became Apostolic Delegate to Great Britain, Malta, and Gibraltar, being consecrated in the same year archbishop of Clus. Appointed archbishop of Liverpool in 1953, he succeeded Cardinal Griffin (q.v.) at Westminster in 1956.

Godfrey of Bouillon (c. 1060-1100), leader of the first crusade, the second son of Eustace II, count of Boulogne. He was b. at Baisy in Belgian Brabant, and served in the train of the Emperor Henry IV. He fought with conspicuous gallantry at the siege of Rome, 1082, and was rewarded with the duchy of Lower Lorraine. In 1096, with his brothers Eustace and Baldwin, he rode to Constantinople, and paid homage to Emperor Alexius in 1097. Two years later he led the march to Jerusalem, and was elected its ruler on 22 July. In Aug. of the same year he defeated the sultan of Egypt on the plain of Ascalon, and after a year spent in organising he d. See S. Runciman, *History of the Crusades*, vol. 1, 1951.

Göding, see HODONIN.

Godiva, Lady (fl. 11th cent.), wife of Leofric, earl of Mercia and lord of Coventry. According to legendary hist. she released the townfolk of Coventry from the heavy taxation imposed by her husband by riding through the town clothed only in her long hair. The story is first told by Roger of Wendover. The G. procession which was included in Coventry fair from May 1678 ceased in 1826, but has since been revived from time to time.

Godley, Alfred Denis (1856-1925), scholar and poet, b. Carrigallen, co. Leitrim. He was educ. at Harrow and Oxford, where from 1883 to 1912 he was a fellow of Magdalen, and from 1910 was public orator to the univ. A fine classical scholar, he made translations of Herodotus, Tacitus, and Horace, and is especially remembered for his vols. of elegant and witty verse, *Verses to Order*, 1892, *Lyra Frivola*, 1899, and *Fifty Poems*, 1927. He also wrote *Aspects of Modern Oxford*, 1893, and *Oxford in the Eighteenth Century*, 1908.

Godmanchester (anot Duroilipons), municipal bor. of Huntingdonshire, England, on the R. Ouse, 1 m. SE. of Huntingdon. G. is an anot tn, engaged in agriculture, with a fine 14th-cent. church and many old buildings. Pop. 2499.

Godolphin, Sidney Godolphin, 1st earl of (1645-1712), politician, b. G. Hall, near Helston, Cornwall. He became attached to the court as a page in 1662. In 1679 he was appointed a commissioner of the Treasury. He became first commissioner in 1684, when he was raised to the peerage. On the accession of James II G. was appointed chamberlain to the queen, but he returned to the Treasury in 1686, and continued to support James to the end of his reign. William III, however, retained him in office until 1696.



SIDNEY, EARL OF GODOLPHIN

In 1700 he was once more reinstated, and on the accession of Anne in 1702 became lord high treasurer, an office which he held till 1710, when he was summarily dismissed. He had been created an earl in 1706. Though an unscrupulous intriguer, he was a capable administrator, and his masterly control over the finances did much to secure the success of Marlborough's continental campaigns.

Godolphin and Latymer School, founded as a boys' school by Sir Wm Godolphin in 1707 at Hammersmith, London, and rebuilt and re-endowed as a girls' school in 1905.

Godowsky, Leopold (1870-1938), Polish composer and pianist, b. Wilno; studied pianoforte there, and at the age of 9 appeared in public. After a tour of Russia and Poland he studied from 1881 to 1884 under Ernst Rudorff in Berlin, and under Saint-Saëns in Paris, 1887-1890. From 1890 to 1900 he was teacher and concert pianist in U.S.A.; then for many years in Berlin, and in 1909 director of Klaviermeisterschule, Vienna. Works: studies on Chopin's *Études*, 1904; *Symphonic Metamorphoses of Themes of Johann Strauss, Walzermasken*, etc.

Godoy y Alcazaga, Lucila, see MISTRAL.

Godoy y Alvarez de Faria, Manuel de, Duke of Alcudia (1767-1851), Sp. statesman, b. Badajoz. While serving in the royal guards he became the lover of Maria Luisa, wife of the future king, Charles IV, and after Charles came to the throne G. rapidly attained influence and position, being made duke of Alcudia in 1791, and, from 1792 to 1797, minister of state. He played a conspicuous part in the affairs of Spain during the Fr. Revolution and the Empire. He declared war on France (1792-5) but was defeated and negotiated the treaty of Basel (1795). Restored to power again in 1801, he allied with France and led an attack on Portugal; he helped France in the war with England (1801-5), but incurred great unpopularity on account of his arbitrary conduct and, above all, for the defeat of the Sp. fleet at Trafalgar, and after 1808 lived in exile. His *Memoirs* (pub. in Eng.) were pub. in 1836.

God's Truce, name given to a means of promoting peace devised by the Church, when, after the fall of Charlemagne's empire, in the 9th and 10th cents., the right of private war and vengeance (as practised by early Teutonic races) threatened to become a source of anarchy instead of a rough and ready form of justice. There was a mutual agreement on the part of the barons and nobles of certain dists. to abstain from war between fixed days, and respect the rights of all following purely peaceful callings, such as priests, travellers, or tillers of the soil. Originating in S. France at the synod of Tuluges in Roussillon, 1027, the custom spread to Germany, Italy, Spain, and England. The chief stipulations were: (1) the keeping of peace from Wednesday evening to Monday morning; (2) during Advent and Lent; and (3) on the prin. saints' days and holy days. Breaking of the *treuga Dei* was punishable by fines, banishment, and excommunication. The council of Clermont (1095) under Urban II confirmed the truce. The Emperor Henry III (1017-56) adopted it as imperial law. It fell into disuse in the 13th cent. See E. Semichon, *La Paix et la trêve de Dieu*, 2nd ed., 1869.

Godstone, par. of Surrey, England, between Reigate and Oxted, and rural dist. of 4464 ac. comprising 14 pars. G. has a church founded in the 13th cent., later restored, and a 16th-cent. inn. Pop. (par.) 3926; (rural dist.) 34,170. See also LIMPFIELD, LINGFIELD, OXTED, and CHELSHAM.

Godunov, Boris Fëdorovich (1552-1605), tsar of Muscovy. A boyar of Tatar origin, G. rose during the latter part of Ivan the Terrible's reign and practically ruled the country during the reign of Ivan's son Fëdor, during which time the Patriarchy of Moscow was estab. (1589). On Fëdor's death (1598) G. was elected tsar by the Zemskiy Sobor (q.v.). He was very unpopular, was widely considered a usurper, and was accused of causing the death of the rightful heir Prince Dmitriy. He d. during the advance on Moscow of a false claimant to the throne. See TROUBLES, TIME OF.

Godwin, or Godwine (c. 990–1053), earl of Wessex, one of Canute's most powerful supporters by 1018. He had married the sister of Canute's brother-in-law and thus secured a commanding position among the Anglo-Dan. nobility. He helped to place Edward the Confessor (q.v.) on the throne of England (1042), but though G. has been pictured as the champion of Saxon interests against the growing Norman influences at court, the motive behind all his actions was in fact personal ambition and family aggrandisement. Much of the unrest of Edward's reign was the result of G.'s unscrupulousness. In 1051 Edward felt strong enough to exile G., whose position had been weakened by the crimes of his son, Sweyn. But in 1052 the king had to welcome G. back on a wave of popular reaction and G.'s position remained unassailable for the rest of his life.

Godwin, Francis (1562–1633), prelate, b. Hannington, Northants. Educ. at Oxford, he took orders and became bishop of Llandaff in 1591. A friend of Selden and Camden, he was celebrated as a historian, but is chiefly remembered for his fanciful story, *The Man in the Moon*, pub. in 1638, which had great popularity and inspired Cyrano de Bergerac's *Voyage to the Moon* and Swift's *Gulliver's Travels*.

Godwin, Mary Wollstonecraft (1759–97), feminist, b. near London, of Irish descent. Owing to her father's thriftlessness, she had to earn her living by teaching (1778–88), and then worked for Johnson, the publisher, as reader and translator. While thus engaged she met Paine, Priestley, and Fuseli (qq.v.). Going to Paris she collected materials for her never-finished *Historical and Moral View of the French Revolution*, 1794, and there met Capt. Imlay, who soon deserted her. She married Wm G. in 1797, dying at the birth of their daughter, who became the second wife of Shelley (see SHELLEY, MARY WOLLSTONECRAFT). A portrait of Mary W. by Opie, is in the National Portrait Gallery. Mrs Opie's *Adeline Mowbray*, 1804, was founded on the outlines of Mary's life. Her works include *Thoughts on the Education of Daughters*, 1787, *Original Stories from Real Life*, 1788, *Answer to Burke's Reflections on the French Revolution*, *Original Stories for Children*, 1791, *Vindication of the Rights of Women*, 1792, and *Posthumous Works*, 1798. See memoirs by Wm Godwin, 1798; Elizabeth Pennell, 1885; E. Rauschenbusch-Clough, 1898; and M. Linford, 1924.

Godwin, William (1756–1836), novelist and miscellaneous writer, b. Wisbech, Cambs. He was a dissenting minister, preaching at Ware and Stowmarket in 1777–82. His faith being shaken by the study of Fr. philosophers, he gave himself up to a literary career. He wrote a *Life of Chatham*, 1783, and *Sketches of History in Six Sermons*, 1784, but his first important work was *Enquiry Concerning Political Justice*, 1793. In this he revealed himself as a sympathiser with

the Fr. Revolution, and representative of Eng. Radicalism. G. taught that gov. is not an end in itself and that man's true growth is towards emancipation from it. He perceived the evil of collectivism. Agnostic, he attacked organised religion, rejected the hope of immortality, and regarded Christianity as harmful because it diverted men's thought from their potentialities in the world to their expectations of another. He married Mary Wollstonecraft in 1797, though both disregarded the importance of a legal tie except for the sake of the children. G.'s views, however, became modified in later life. He knew many celebrated people of the day, such as Paine, Southey, Coleridge, Lamb, and Shelley (who married his



WILLIAM GODWIN

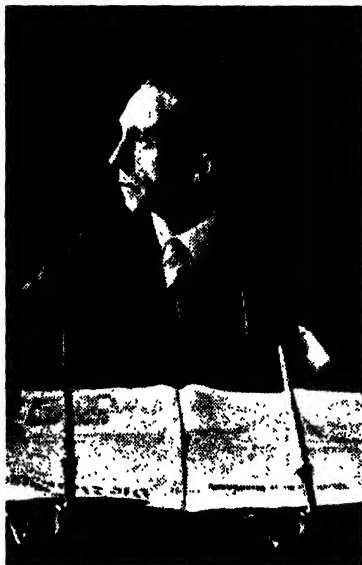
daughter Mary). His works include *The Adventures of Caleb Williams*, 1794, *St Leon*, 1799, *Fables*, 1805, and other children's stories under the name E. Baldwin; *Mandeville*, 1817, *History of the Commonwealth of England*, 1824–8, and *Thoughts on Man*, 1831. See W. Hazlitt, *The Spirit of the Age*, 1825; Sir L. Stephen, *English Thought in the 18th Century*, 1876; and studies by C. K. Paul, 1876; H. Roussin, 1913; F. K. Brown, 1926; G. Woodcock, 1946; and Rosalie G. Grylls, 1953.

Godwin-Austen, Henry Haversham (1834–1923), Eng. explorer. He joined the army in 1851 and the Trigonometrical Survey of India in 1857. He made many ascents in the Himalaya and is noted for his physical survey of the Baltoro region of the Karakoram. To him we owe the first maps and descriptions of the great Baltoro glacier and surrounding ranges, which include K2 (q.v.) (28,250 ft), the second highest mt in the world. The latter peak was named Mt G.-A. after him in 1888, but the name has lapsed in favour of the original identification sign.

His works include *On Land and Fresh-water Mollusca of India*, 1882-89, and *The Fauna of British India* (with Dr Blandford), 1908.

Godwit, or *Limosa*, genus of wading birds of the snipe family (Scolopacidae), much resembling sandpipers. They have very long bills, slightly upcurved; long, slender legs, with a great part of the tibia bare of feathers, and the claw of the third toe comb-like. Five species of this genus *Limosa* are known, all frequenters of marshes, especially by the seashore. They inhabit the Arctic and temperate regions of the N. hemisphere chiefly, but migrate southwards in the summer as far as North Africa, South America, and New Zealand. As birds of passage, the black-tailed G. (*L. limosa*) and the bar-tailed G. (*L. lapponica*) are found in Britain. The former at one time used to breed extensively in E. England. The females are larger than the males. Other species are the marbled and the Hudsonian G. (*L. fedoa* and *L. haemastica*), or 'marlin.' G.s. are valued as a table delicacy, and sent from Holland to London.

Goebbels, Paul Joseph (1897-1945), Ger. politician. B. Rheydt, Rhineland,



JOSEPH GOEBBELS

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of peasant stock, he succeeded through scholarships and hard work in providing himself with a first-rate education and studied at sev. univs., graduating Ph.D. at Heidelberg in 1920. He then became a

journalist. In 1922 he became a most efficient propagandist of National Socialism and in 1926, after successful campaigns in the Rhineland and the Ruhr, he was made party leader, or *Gauleiter*, for Berlin. In 1927 he founded the Berlin daily paper *Der Angriff*, which he ed. His newspaper was as ruthless and as active as his shock troops. Its campaigns employed any lie or distortion of facts to suit the purpose of the moment. Libel actions failed to suppress either the pub. or its editor. In 1928 he was elected to the Reichstag and in the following year he was made chief of party propaganda and, in 1933, minister of propaganda and popular enlightenment in Hitler's gov. In his capacity of minister of propaganda his cynical ingenuity matched his entire want of moral scruple. The press, literature, the cinema, theatres, music, and every other cultural field came under his control, and each and all were subordinated to the task of popularising Nazi policies and explaining away the deficiencies of Nazi rule. Germany probably owed her initial political successes in the 'war of nerves' as much to his propagandist machine as to any other agency. Later he held the rank of *Reichsleiter* in the party and was made president of the *Reichskulturkammer*. An unhappy, perverted man, leading a notoriously dissolute life, he yet often posed for pictures designed to show him as a family man. The leading power in the Nazi hierarchy, he realised, in the last days of the Russian siege of Berlin, that he would eventually be tried as a war criminal, and chose to escape his inevitable doom by taking his own life and those of all his family. See L. Lochner (editor), *The Goebbels Diaries*, 1948; and life by C. Riess, 1949.

Goeben, August Karl von (1816-80), Prussian general, b. Stade, Hanover; son of Maj. Wilhelm von G. He served as lieutenant of infantry in the first Carlist war in Spain, 1835-40, and in 1860 under O'Donnell in Morocco, also in the Prussian wars against Denmark, 1864, and Austria, 1866. In Franco-Prussian war commanded 8th Army Corps; at Saarbrücken, Gravelotte, and Metz; commanded N. of France campaign that ended in victory of St. Quentin, 19 Jan. 1871. He commanded 8th Army Corps at Koblenz till his death there, 13 Nov.

'Goeben' and 'Breslau.' These 2 ships, which during the earlier part of the First World War eluded the vigilance of the Brit. Navy and got into Turkish waters, were nominally bought from the Ger. Gov. by Turkey as 'compensation' for the action of the Brit. Gov. in taking over 3 other ships which at the time were being built in Eng. shipyards to the order of the Turkish Gov. As a fact, Ger. crews remained in charge of the ships. The *G.* and *B.* were then in the Mediterranean, and, escaping the Brit. squadron under Adm. Troubridge, came out of their refuge at Messina on 7 Aug. 1916, and afterwards made a dramatic reappearance before Constantinople on 11 Aug. The plot was a clever one. Germany 'generously'

offered her 2 ships to Turkey by way of compensation for England's 'theft.' The Brit. Gov. contended that legally the 2 battleships should be dismantled and the crews interned. Eventually the Brit. Gov. agreed to the Porte's wishes that the crews should remain on board until the Turkish crews, which had come to England to sail the ships in commission to Turkey, should have returned. But when these crews did reach Turkey it was too late, for the Germans, abetted by Enver Bey, had carried through their intrigue, with the result that Adm. Limpus and his Brit. officers had to leave the ships and Turkish officers came aboard. The Brit. Admiralty held an exhaustive inquiry on the escape of the 2 ships, with the result that Rear-Adm. Troubridge applied for trial by court martial. The finding of the court martial was an honourable acquittal for Troubridge. The *G.* was a 28-knot boat, as against the 20-knot speed of Troubridge's armoured cruisers, and her guns had a range of 18,000 yds as against 14,000-15,000. Hence the *G.* could have steamed round Troubridge's squadron and sunk each boat in detail. After the war the *G.* was renamed *Yavuz*, mounting 10 11-in. guns and 4 torpedo tubes.

Goedeke, Karl (1814-87), Ger. literary historian, b. Celle. He was educ. at Göttingen, and eventually became prof. of hist. there. His prin. work is *Grundriss zur Geschichte der deutschen Dichtung*, 1859-81, and his biography of Goethe is also well known. He was a remarkably prolific author, and wrote sev. novels and a drama entitled *König Kodrus, eine Missgeburt der Zeit*, 1839, as well as much critical and biographical literature. Besides those mentioned, his pubs. include *Deutschlands Dichter von 1813 bis 1843*, 1844, *Elf Bücher deutscher Dichtung von Sebastian Brant bis auf die Gegenwart*, 1849, and *Deutsche Dichtung im Mittelalter*, 1852-4.

Goeje, Michael Jan de (1836-1909), Dutch Arabic scholar. In 1866 he was appointed prof. of Arabic at Leyden. He ed. sev. Arabic historical and geographical texts, such as *al-Baladhuri*, 1868, *Fragmenta historicorum arabicorum* (2 vols.), 1869-71, *al-Tabari*, 1879-1901, *Bibliotheca geographorum arabicorum* (8 vols.), 1870-1904; and wrote vols. iii-v of *Catalogus codicum orientaliu bibliothecae Lugduno-Batavae*, 1865-73. Among his other works are *Mémoires d'histoire et de la géographie orientales*, 1862-1903. He also ed. Arabic poetry (*al Wālid*, 1875, *Ibn Qutaybah*, 1904) and pub. works on Arabic hist., religion, literature, and so on.

Goering, Hermann Wilhelm (1893-1946), Ger. field marshal and politician, b. Rosenheim, Bavaria. In the First World War he was successively pilot, squadron-leader, and finally commander of the famous Richthofen 'air circus.' After the war he served in civil aviation in Sweden, and was engaged in the aero-engine industry in Germany. In 1922 *G.* became an active supporter of the new National Socialist party. He took part

in Hitler's abortive Munich *putsch* in 1923 and again, after the collapse of Hitler's party, became an exiled drifter. In 1926 he returned to Germany, where Hitler's party was beginning to gain influence. In return for the promise of large contracts he secured the support of important industrial concerns and, by plotting and intrigue, became, in 1928, one of the Nazi party's representatives in the Reichstag, and, in 1933, after Hitler's coup, prime minister of Prussia and minister of the interior. In this latter capacity he reorganised the police and the internal administration in accordance with Nazi ideas. In 1934 he was prime minister of the Reich and promoted to the rank of general, and in the meanwhile had made himself minister of aviation. It was now that he began secretly to lay the foundations of Ger. air power. He started the Air Sports League, outwardly one of the youth organisations that were so popular in Germany, but in 1935 the members of the league were being supplied with uniforms. He then turned to economics and was appointed commissioner of the 'four-year plan,' gradually ousting Dr Hjalmar Schacht, representative of conservative business interests, and becoming virtual economic dictator of Germany. In 1938 he received the rank of field marshal and was designated as Hitler's successor in the event of the latter's death.

In 1937 he became Reich minister for foreign affairs. The documents in the Nuremberg trial reveal the large share he had in preparing a desperate war of aggression, and prove his knowledge of the manifold atrocities committed by the Nazi regime. In his defence at Nuremberg, *G.* concluded his examination-in-chief with words which he impudently attributed to Churchill: 'In a struggle for life and death there is no legality,' words which aptly sum up the man *G.* and everything he stood for, as seen in an address that lasted for 12 hrs and in which all his powers of persuasion were concentrated on maintaining that, given the inevitability of war, any measure was justified in the last resort so long as it rounded to the greatness of the Ger. Reich.

G. was also involved in the cold-blooded shooting of nearly 50 officers of the R.A.F. after their mass escape from Stalagluft III, though he claimed that he had protested to Hitler about it. On the bombing of Warsaw, Rotterdam, and Coventry, all ordered by him, he said that Warsaw had refused to surrender and that civilians were resisting in defiance of the rules of international law and that, as to Rotterdam, 'it was in everybody's interest, to get the campaign over quickly,' and it was always on this cynical note that *G.* concluded his arguments. He was sentenced to death at Nuremberg, but, despite the vigilance of his guards, succeeded in secreting poison (not improbably through his wife) and took his own life rather than face the hangman.

It was *G.* who coined the slogan 'Guns before butter' to induce the Ger. people to

restrict consumption in order to promote rearmament. G. was interested financially in some of the leading industrial concerns of Germany and would seem to have been extremely wealthy. At Berchtesgaden (q.v.) was found a modest rustic building containing his art loot—jewels, pictures, ceramics, and statuary relics, of which the lowest valuation was £20,000,000.

Goes, Bento de (1562–1607). Jesuit missionary of Portuguese birth, b. in the Azores. In 1603 he was sent on a mission to the Great Mogul, and thence to Cathay. On his travels he acquired an extensive knowledge of the geography of Asia, ascertaining that Cathay and China were one and the same place. *The Travels of B. de Goes from Lahor to China* is the name of the Eng. version of his writings.

Goes, Hugo van der (c. 1440–82). Flem. painter, b. Ghent, and one of the greatest 15th-cent. Flem. masters. He was noted for his technique, which was much admired in Italy, and also for the emotional force of his painting. His most famous work is the 'Portinari' altarpiece (Uffizi) painted for the Ghent agent of the Medici, Tommaso Portinari. He became a monk at Brussels in 1475, but continued to paint. See J. Destree, *H. van der Goes*, 1914, and Sir M. Conway, *The Van Eycks and their Followers*, 1921.

Goes, tn in the prov. of Zeeland, Netherlands, situated on the is. of South Beveland. There is a 16th-cent. Gothic church and a picturesque tn hall, restored in 1771. The tn is known for its Tuesday market, when the country women appear in their colourful costumes. G. is the centre of the linen industry; others are brewing, book-binding, boat-building, and the manuf. of cigars. It is connected with the E. Scheldt by a canal. Pop. 14,360.

Goethals, George Washington (1858–1928), Amer. major-general and engineer, b. Brooklyn. Taught for a while at West Point; worked at riv. improvements in neighbourhood of Pittsburgh; then, as major in regular army, took charge of fortifications at Newport, Rhode Is. Joined the general staff at Washington. In 1907 appointed chief of new organisation for work on Panama Canal, with supreme civil and military power. After opening of canal, May 1914, first civil governor of Canal Zone—resigned 1916—having become major-general 1915. Late in 1917 acting quartermaster-general. In 1918 chief of div. of purchase, storage, and traffic; member of War Industries Board. Retired from service, 1919. See life by J. B. Bishop, 1930.

Goethe, Johann Wolfgang von (1749–1832), Ger. poet, dramatist, and philosopher, who 'placed his nation at the head of the intellectual movement of the century' (Scherer). G. was b. at Frankfurt-on-Main, of an affectionate and joyous mother, who was her son's first playmate and teacher, transmitting to him her love of story-telling and her mirthful disposition; and of a cold, stern, rather pedantic father, whose uprightness and

stability of character must have entered in some degree into his son's composition, since G., 'often erring' as he tells us, always 'found himself' again. The G. family belonged to the well-to-do burgher class, and the poet's whole life was spent in conditions of prosperity and comfort, a circumstance which his detractors use to belittle him, and his admirers (Carlyle, Lewes, and others) to add to his glory, in that he maintained throughout life a high degree of simplicity, even austerity, in material things. In 1765 he entered Leipzig Univ. as a law student. Here he



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From the painting by George Dawe, 1819

spent 3 restless years, distinguishing himself, on the one hand, for unusual wisdom and on the other for recklessness, extravagance in thought and behaviour, for waywardness and melancholy, alternating with high spirits. He filled his days with pleasure and some study, came under the influence of the Fr. dramatists at the theatre, began his life-long habit of falling in love, and returned home in broken health to an angry father with 2 comedies of his own composition, *Die Laune des Verliebten* (which may be styled 'Lovers' Quarrels') and *Die Mitschuldigen* (The Fellow Sinners) (only pub. in 1787). Next he studied at Strasburg for about 2 years, where he formed a friendship with Herder, who roused in him an overwhelming enthusiasm for Shakespeare and for the old Ger. epics. The result of this was that G. soon became one of the foremost leaders in the *Sturm und Drang* ('Storm and Stress') movement which expressed the reaction against the tyranny

of classical and Fr. influence on thought and literature, and the wish to put away all that was artificial, to return to 'nature' and 'reality.' Lessing had preached this, and the young Romantic school practised it, even to outrageousness at times. G.'s 2 works, *Götz von Berlichingen* and *Die Leiden des jungen Werthers*, are the direct outcome of this movement. The former was written soon after G. left Strasburg, though not pub. until 1773; *Werther* was pub. in 1774. At Strasburg the poet studied art, gained his degree of *doctor juris*, and wrote some of his most beautiful lyrics under the inspiration of Friederika Brion. His life at Wetzlar in 1772, in close friendship with Kestner and his betrothed, Charlotte Buff (Lotte), with whom G. fell in love, creating a situation honourably sustained by all 3 friends, gave him the inspiration for *Werther*. The romance embodies the actual facts of this experience up to a certain point only, though the description of its effect on Werther's (G.'s) temperament is truer to life. The book caused a tremendous sensation, abroad as well as in Germany. Carlyle calls it 'the voice of the World's Despair.' G. was now living in Frankfurt, and here his acquaintance was sought by the most notable men of the day in Germany, among others Klopstock, Lavater, Basedow, Jacobi, and the Stolbergs. *Clavigo*, *Stella* (an extravagant comedy for lovers, which suggested to Canning the parody of *The Rovers* or *The Double Arrangement*), *Prometheus*, *Der ewige Jude* (The Wandering Jew) (of which very little remains extant), and *Mahomet* were produced; *Faust* was begun, as well as immortal lyrics (such as *Neue Liebe neues Leben*, *Heidenröslein*, *Herz mein Herz*, *was soll das geben*) addressed to Fräulein Schönmann (Lili).

In 1775 G. accepted an invitation from Duke Karl August to his court at Weimar. The strong attachment which already existed between the 2 men was deepened by further intercourse, and Weimar was henceforth the poet's home. He took part in public life, was created *Geheimrat* (privy councillor), then president of the Chamber of Finance, and was ennobled in 1782. His intellectual activities were stimulated by the duke and his wife, the Duchess Luise, and a circle of brilliant friends, including Herder, Musaeus, Knebel, Wieland, and Schiller. His love for Frau Charlotte von Stein, which lasted 10 years and inspired further lyrics, dates from 1776. She was a noble-hearted woman, a lady of the court, wife of the master of the horse, and 33 years of age, with 7 children. G.'s letters to her extend over a period of nearly 50 years. A note in G.'s diary shows that he decided at Weimar to have done with the lawlessness of youth and to start on a course of self-culture; he saw that he had, to use Browning's words, 'Somewhat to cast off, somewhat to become,' or as he himself expressed it later, he resolved to cease doing things by halves and to work out life in its totality, beauty, and goodness, 'Vom Halben zu entwöhnen, und im

Ganzen, Guten, Schönen, resolut zu leben.' The first sketches for *Iphigenia*, *Tasso*, *Egmont*, and *Wilhelm Meister* were made; *Faust* was continued, and lyrics produced. In 1786 he escaped from the work and festivities of Weimar and went to Italy, where he spent a year and a half, mostly in Rome and Naples. Here he worked at his poems and plays, studied and practised art (Tischbein and Angelika Kaufmann were among his friends), and pursued investigations in science.

This was a period of great development for G., indeed it changed his intellectual standpoint. He outgrew the *Sturm und Drang* phase and worked towards the Gk ideal of calm and harmony, recasting and publishing (1786) under this new influence *Iphigenia*, in which the rules of classical poetry, cast aside with jubilant satisfaction in his earlier writings, were closely observed. His matchless *Römische Elegien*, 1788, enshrine side by side this new spirit and his love for Christiane Vulpius, who became his wife in 1806. *Tasso*, 1790, reflects the conflicts in the author's own mind caused by the various influences he had encountered in his life up to then. In 1794 G. and Schiller, who hitherto had been but mere acquaintances and, in some degree, rivals, entered upon a close and noble friendship which lasted until Schiller's death. Schiller constantly aroused G.'s enthusiasm, and G.'s influence made Schiller a clearer thinker. The two poets started a magazine, *Die Horen*, to try to raise the standard of taste in art and literature; it failed, and the epigrams, called the *Xenien*, the joint work of the two friends, were 'fired off' in revenge against the magazine's enemies. The pub., in 1796, of *Wilhelm Meister's Lehrjahre* (or Apprenticeship) estab. G.'s fame for ever. In this rambling and discursive romance in 8 books, G. develops his philosophy of the conduct of life in describing the career of a young Ger. artist at the beginning of the 19th cent. In the course of the work the weak-willed, dreamy, self-indulgent hero attains power of self-control and a sense of duty. But, as is usual in G.'s writings, there is no direct moral teaching; the work is a picture of 'rich, manifold life brought close to our eyes,' and the picture, being true to life, reflects the laxity of morals in the Germany of the time, and it is drawn without that comment which alone would have satisfied hostile critics. One of the many varied scenes in the vol. is the unforgettable poetic and touching incident of Mignon and the Harper, which has deservedly become universally famous. The valuable criticism on *Hamlet* is also to be found in *Wilhelm Meister*. *Hermann und Dorothea*, 1798, written in a spirit of patriotism, is a poem of simple beauty and idyllic charm, with a background of troublous times, the fruits of the Fr. Revolution, towards which G. felt no sympathy. In it the human and tender side of the poet's genius is seen at its best; it is his masterpiece in this kind. G.'s greatest work, *Faust*, occupied him in the intervals of other work for upwards of

50 years: it has been well called 'the companion of his literary life,' and was first pub. as a whole in 1831. It reflects the evolution of the thought and character of the man G. from youth to age, and is therefore of unique biographical interest. Faust, like G., struggles for perfection, often yields to evil but never comes to love it or to lose his belief in the right and good. His failure in his quest for absolute knowledge leads him to despair, from which he is rescued only by a life of useful labour. This outcome leads us straight to the keynote of the Goethean philosophy—*renunciation and resignation*, and to the poet's conviction that 'He only earns his freedom and existence, Who daily conquers them anew' (Bayard Taylor's trans.), in Faust's dying words: 'Nur der verdient sich Freiheit wie das Leben, Der täglich sie erobern muss.'

The 2 parts of *Faust* are as dissimilar as the influences under which they were written, Part I being 'romantic' and Part II 'classical' in form and spirit. The involved symbolism of Part II is very difficult to comprehend. Both parts rise to the loftiest heights of poetry and art. G.'s achievements in science, optics, botany, anatomy, and mathematics include some useful discoveries and many misconceptions; his discovery of an intermaxillary bone in man was important. His prin. scientific treatises are *Metamorphoses of Plants* and *Farbenlehre* (Theory of Colour). Many less known works have not been mentioned above. Among them may be mentioned *Die Wahlverwandtschaften*, 1809, a story which is sometimes regarded as showing the immoral tendency in G.'s works. In it a married couple are thrown into the constant companionship of 2 unmarried persons and a cross-attraction ensues. The psychological changes by which this result is effected are depicted with great skill. The 3 ballads, *Die wandernde Glocke*, *Der Getreue*, and *Der Todtentanz*, 1813, written during the height of Napoleon's power, were not impassioned like the songs of Körner nor inspired like the orations of Fichte, for G. had, evidently, little sympathy with the rise of the Ger. people against the dictator. *Westölicher Diwan*, 1814, was an attempt to introduce poetry into Germany, an example which was followed by Heine. In 1797 G. wrote *Die Braut von Korinth*, *Gott und die Bayadère*, *Der Zauberehring*—all being pub. in the *Musen Almanach* for 1798—which have affinities with the contemporary works of Schiller. At this time too G. trans. much of the autobiography of Benvenuto Cellini and wrote a number of essays on aesthetics. G.'s life and character are best studied in his works, nearly every one of which presents some aspect of the man as he was when he wrote it. As Carlyle says: 'In Goethe's works . . . we see . . . a mind working itself into clearer and clearer freedom, gaining more and more perfect dominion of its world.' His formal auto-

biography *Dichtung und Wahrheit*, 1811–1822, the work of his old age, is inaccurate, not in fact alone, but more seriously, in what Lewes calls 'tone.'

EDITIONS: Götz von Berlichingen, 1773; *Die Leiden des jungen Werthers* (Sorrow of Werther), 1774; *Iphigenie auf Tauris*, 1787; *Egmont*, 1788; *Torquato Tasso*, 1790; *Wilhelm Meisters Lehrjahre*, 1796; *Hermann und Dorothea*, 1798; *Poems*, and *Faust*, Part I (not pub. till 1808); *Die Wahlverwandtschaften* (novel), 1809; *Aus meinem Leben, Dichtung und Wahrheit* (autobiography), 1811, 1812, 1814, and onwards; *Italinische Reise* (Italian Tour), 1816–17; *Westölicher Diwan* (lyrics), 1819; *Wilhelm Meisters Wanderjahre*, 1821–9; *Trilogie der Leidenschaft*, 1822; *Faust*, Part II, 1832; *Dichtung und Wahrheit* (last vol.), 1833. G.'s works were collected at Stuttgart in 1806–10; in 1815–22; in 1827–30; with posthumous works, 1832–42. *Sämtliche Werke*, in 1868–79, was by Hempel, Berlin. The prodigious Weimar ed. dates from 1887 to 1919. A complete bibliography up to 1910 is in vol. iv of K. Goedeke's *Grundplan of the History of German Poetry* (Dresden), 1910.

ENGLISH TRANSLATIONS: Most of G.'s works are in Bohn's Standard Library. *Faust* has been trans. by many, including Sir Theodore Martin (Everyman's Library). See also M. Herzfeld and C. A. M. Sym (trans.), *Goethe: Letters, 1766–1832*, 1957.

BIOGRAPHIES, MANY COMBINED WITH CRITICISM: It is to the credit of Britain that the first adequate biography of G. was by G. H. Lewes, 1855, though there had been a slighter work by J. W. Schafer, 1851; H. Duntzer, 1880 (trans. into Eng., 1883); J. Sime, 1888; O. Browning, 1892; A. Bielchowsky, 1895 (Eng. trans. by W. A. Cooper, 1905–8); H. G. Atkins, 1904; H. S. Chamberlain, 1912; Prof. F. Hume Brown, 1920; E. Ludwig, 1920–1 (trans. by Ethel Mayne, 1928); G. Brandes, 1922; J. G. Robertson, *Goethe and Byron*, 1925, and *Goethe*, 1927; A. Schweitzer, *Goethe*, 1939, 1949; K. Vietor, *Der junge Goethe*, 1950; E. M. Butler, *Byron and Goethe*, 1956.

CRITICISM: T. Carlyle (whose powerful praise introduced Eng. readers to G.), 1828–32; R. E. Emerson in his *Representative Men*, 1882; B. Fairley, *Goethe as revealed in his Poetry*, 1932, and *A Study of Goethe*, 1948, and *Goethe's Faust: Six Essays*, 1953; K. Vietor, *Goethe the Poet*, 1949, and *Goethe the Thinker*, 1951; A. Gillies, *Goethe's Faust: An Interpretation*, 1957. See also G.'s *Conversations with Eckermann*, 1836–1843.

Götz z Berlichingen, see BERLICHINGEN, GÖTZ VON.

Gog and Magog, names used sev. times in the Bible. In Genesis, M. is spoken of as a son of Japhet; in Ezekiel G. appears as prince of M., an enemy of Israel in the Far N., and in Revelation G. and M. are considered a comprehensive term for the powers of evil. The names are also given to the 2 giants in the Guildhall, London. They were not

connected with London legend until the reign of Henry V, when they were represented as the giants who fought against the Trojan invaders led by Brute, who is supposed to have given his name to Britain; but there are other versions of the story. The original figures were burnt in the Great Fire; the next ones made in 1708 were destroyed in the Blitz. The present figures were erected in 1951.

Gog Magog Hills, chalk hills (222 ft. some 4 m. S.E. of Cambridge, England. Here are the Brit. earthwork Wandlebury Camp and traces of a Rom. road.

Gogarty, Oliver St John (1878-1957), surgeon, poet, and writer of memoirs, b. Dublin. He was educ. at Stonyhurst and Trinity College, Dublin, where he was a fellow-student of Joyce (q.v.) who depicts him as Black Mulligan in *Ulysses*. An opponent in politics of the Sinn Féiners, G. was kidnapped during the troubles in 1921, and from 1922 to 1936 was a senator of the Irish Free State. Famous for his wit, he was acquainted with the chief writers of the Irish Renaissance, including Yeats, George Moore, and G. W. Russell. Among his vols. of verse are *Poems and Plays*, 1920, *An Offering of Swans*, 1924, *Others to Adorn*, 1938, and *Elbow Room*, 1939, but he was best known for his racy books of memoirs, *As I Was Going Down Sackville Street*, 1937, *Tumbling in the Hay*, 1939, and *It Isn't This Time of Year at All*, 1954. A Rom. Catholic, G. lived in Galway, and also spent some time in the United States.

Gogh, Vincent van (1853-90), Dutch painter, son of a clergyman at Groot Zundert, N. Brabant. When about 16 he entered the employment of Goupil & Co., art dealers, and later was sent to England. Disappointed in love, he left Goupil's and became a schoolmaster in England. Returning to Holland, he studied theology for a year at Amsterdam, and became a missionary among the Belgian miners. Already an artist, G. studied painting at The Hague, and in 1884 joined the Antwerp Academy. His brother, in Paris, introduced him to the impressionists, who revealed a new world of colour to him. Jap. prints were also a revelation. At Arles, associated for a while with Gauguin, he painted many of his best pictures. Still-life, portraits, landscapes were all equally within his splendidly original scope. After his breakdown at Arles he spent his days first in the asylum at St Rémy and then under Dr Gachet's care at Auvers-sur-Oise, where in despair at his condition he shot himself. He painted to the end. G. was a daring colourist, whose flying brush-strokes live. It is said that, after a physical effort of painting, into which he had thrown all his powers with almost volcanic or atomic vehemence, he would sometimes fall in an epileptic seizure. Probably every work of his later years is worth close study. In colour and force of expression he is one of the greatest figures of the post-impressionist period. The following works have been specially praised: Dutch period: 'The Potato Eaters'; Paris

period: 'Boots.' 'View of Montmartre,' 'Woman in the Café Tambourin'; Arles period: 'The Drawbridge,' 'Sunflowers,' 'Café at Night,' 'The Chair and Pipe'; St Rémy period: 'The Cypressess'; Auvers-sur-Oise period: 'Crows flying across a Cornfield.' See letters to his brother (Eng. trans. 1927, 1929); J. B. de la Faille, *L'Œuvre de V. van Gogh*, 1928; lives by J. Meier Graefe, 1936, J. de Beucken, 1946.



W. F. Mansell

VINCENT VAN GOGH:
A SELF-PORTRAIT, 1888

Gogol', Nikolay Vasil'yevich (1809-52), famous Russian writer, Ukrainian by origin; he lived abroad 1836-46, mainly in Rome. He is traditionally considered the originator of the Realist school in Russian literature, though Pushkin (q.v.) had already laid the foundations. Among his best works are 2 series of stories and sketches picturing life in his native Ukraine (*Evenings on - Farm near Dikan'ka* and *Mirgorod*); the historical tale *Taras Bul'ba*, a thrilling account of the Zaporozh'ye Cossacks; *The Government Inspector*, 1836, a comedy exposing the vices of prov. administrative officials; and *The Dead Souls*, 1837, a novel depicting various types of serf-owning prov. gentry. Most of G.'s work is pervaded by what he himself called 'the laughter through tears invisible to the world.' Social criticism was combined in him with mysticism and political conservatism which estranged him from the majority of his generation of writers and publicists, but made him the forerunner of much later Russian religious thought. See his *Works*, 6 vols., trans. by C. Garnett, 1922-8; V. V. Nabokov, *N. Gogol*, 1947; J. Lavrin, *N. Gogol*, 1951. **Gogra**, riv. of India, rising in the Himalaya, and traversing Uttar Pradesh. It flows S.E. and enters the Ganges just

above Chapra, after a course of 600 m. It is navigable almost to the mts, and at its junction with the Ganges is from 1 to 3 m. wide.

Goiânia, cap. of Goiás state, central Brazil, on the plateau NW. of Rio de Janeiro (2500 ft); linked by rail, road, and air with Rio and S. Paulo. G. is an agric. and livestock centre. The region is rich in minerals. It is planned to make G., or a nearby twin city, the future federal cap. of the United States of Brazil. Pop. approximately 60,000.

Góias, see **GOYÁS**.

Goidello, a sub-div. of the Celtic languages (q.v.), including Irish, Scottish Gaelic, and Cornish.

Goll, Loch, inlet (6 m. long, 1 m. wide) of Loch Long, in Argyll, Scotland; at its head is the vil. of Lochgilhead.

Goitre, enlargement of the thyroid gland (q.v.). *Simple Goitre*.—A chronic enlargement of the thyroid gland without overactivity. Simple G. causes no symptoms or functional disturbance other than may sometimes occur from pressure on neighbouring structures, particularly the trachea. Simple G. is endemic in those parts of the world where there is a lack of iodine in the water or food. Parts of Switzerland and the Tyrol are noted for simple G., and in England the name 'Derbyshire neck' used to be given to this condition owing to its commonness among those living in the hill dists. of that county. *Exophthalmic*, or *Toxic Goitre*.—

An enlargement of the thyroid gland with over-activity and signs of thyrotoxicosis (see **HYPERTHYROIDISM**). Toxic G. may be primary or secondary to a simple G. Some form of nervous upset or shock is commonly associated with the onset of exophthalmic G., and for this reason it often occurs at puberty or the menopause. It is commoner in women than men. Thyrotoxicosis is characterised by sweating, anxiety, irritability, palpitations, and loss of weight. The eyes protrude (hence the term 'exophthalmic goitre'), there is a fine tremor of the fingers, and the pulse rate is rapid. Sufferers from thyrotoxicosis dislike heat and prefer the cold. If not checked the condition may cause permanent damage to the heart and subsequent heart failure. Treatment is either medical or surgical, or both, depending on the condition of the patient, the duration and severity of the disease, and the size and position of the G. In mild cases iodine alone is sometimes given. More usually methyl thiouracil is the medical treatment of choice either as a preliminary to operation or as a means of controlling the disease medicinally. Radioactive iodine has recently been used with success in treating cases of thyrotoxicosis. Surgical treatment by removing most or all of the gland (thyroidectomy) aims at eradicating the source of the poison. Any resulting deficiency of thyroid secretion may be replaced by giving thyroid gland extract by mouth.

Gokhale, Gopal Krishna (1866–1915), Indian political leader. b. Kolhapur; his parents were Chitpavan Brahmins.

Graduated Elphinstone College, Bombay; became prof., Fergusson College, Poona. Joined Congress movement; about 1887, secretary to the Sarva Janik Sabha. In England, 1897, witness before royal commission on Indian expenditure. In 1900 elected to Bombay Legislative Council. Soon afterwards selected by its unofficial members to represent them on Imperial Council. Leader of opposition there; nevertheless on recommendation of Lord Curzon G. became C.I.E., 1904. In 1905 (in which year he was president of Congress) founded Servants of India Society, to prepare India for self-gov. On royal commission on public services in India, 1912. See R. P. Parāñjpye, G. K. Gokhale, 1915.

Golasecca, small vil. on the Ticino R., a few m. from the point where it flows into Lake Maggiore (q.v.), Italy. It is situated on the site of a famous cemetery of the Iron Age. The first discoveries in this region were made in the early 19th cent. by the Abate Giani. Castelfranco followed them up in 1874 and pub. accounts which have formed the basis of all later study. The cemetery consists of hundreds of circles made of unworked stones—each circle containing a prehistoric tomb, which itself contained a cinerary urn, and sometimes a vase, weapons, and small objects of iron, amber, glass, or bronze. 'Golaw, Salomon von,' see **LOGAU**, **FRIEDRICH VON**.

Goleonda, decayed city of Hyderabad state, India, 7 m. W. of Hyderabad. It was once the cap. of a powerful kingdom of G., and still possesses a strong fortress, built on a granite ridge, and now used as a state treasury and prison house. The ruins of the fort and particularly the tombs of the kings are very impressive. G. was once the market for diamonds of the area.

Gold (symbol Au, atomic number 79, atomic weight 197.2), metallic element that has been known and valued from the earliest times on account of its occurrence in the free state, the ease with which it can be beaten into articles and ornaments, and its unalterability by water or air. The importance of G. as a metal has certainly not lessened in our day, in fact it is used as the standard for exchange (see **BIMETALLISM**; **CURRENCY**). G. is found almost always in the free state, and sometimes in combination with silver, mercury, and tellurium; it is very widely distributed, and in fact there is scarcely a country or deposit in the world which has not been found to contain G. It occurs principally in rock formations, or in alluvial deposits. The latter, which constituted the chief sources of the G. supply until recently, are termed 'placers,' and consist of an accumulation of gravel, sand, and clay, mixed with particles of G. varying from minute grains to nuggets of considerable size, which have been removed from their original habitat by the action of water and redeposited, e.g. in a hollow of a riv.-bed, the G., by reason of its great density, accumulating in places where the current is least. These auriferous deposits may also be covered by more

recently distributed material and are then termed 'deep leads' or 'dead rivers.' In Europe the most important alluvial deposits are those in the Urals; in Asia those of Siberia; in Africa those of the Rand. A valuable 'strike' was made at Odendaalsrust in the Orange Free State in Mar. 1946. In America the Californian deposits were the cause of the 'rush' of 1849 and are now practically exhausted; the Klondike dist. in Yukon, Canada, also attracted considerable but short-lived attention. Australia contains the most famous alluvial deposits, which have been marked by the occurrence in them of nuggets of considerable weight. The largest ever found, the Welcome nugget, discovered in 1858 at Ballarat in Victoria, weighed 183 lb. and was worth £8370. The Blanch Barkley, found in South Australia, weighed 146 lb. In all cases the recovery of alluvial G. is in principle remarkably simple; the apparatus in which the 'washing' is carried out may be a pan, a cradle, or a tom, whilst for large operations a sluice is used. Where the deposit is not actually near a riv.-bed water is conveyed to it under pressure by means of a pipe line, so that it can be thrown in powerful jets against the banks of gravel, which is thus washed down sluices, the G. being collected as before. Alluvial deposits are now of less importance than the rock deposits in which G. is found. In these the metal occurs in veins, reefs, or conglomerates of quartz and other silicious material in the form of small particles, sometimes embedded in iron pyrites, copper pyrites, or lead ores. The auriferous rock, which is often mined at considerable depths, is first subjected to crushing and then reduced to a very fine powder by stamps, 5 of which usually go to form a battery. A stream of water is circulated through the mortars, and the fine particles of G. are collected on amalgamated copper plates. The G. amalgam is from time to time removed and the mercury distilled off, leaving the G. behind. The material that escapes still contains some G., and is now concentrated by methods similar to those used in treating alluvial deposits. The concentrates, if free from pyrites, are treated with mercury, the G. being recovered from the amalgam formed. The above method of stamping and amalgamation works satisfactorily with 'free-milling' ores comparatively rich in G., but those ores containing sulphides require chemical treatment to remove the metal from the finely powdered material.

The chlorination process is used for treating concentrates containing sulphides and for recovering the G. that escapes amalgamation. The material is first roasted to remove the sulphur and convert the base metals into oxides. It is then placed in large vats, moistened with water, and treated with chlorine gas, which readily converts the G. into the form of chloride which is washed out, the G. being precipitated in the metallic state by means of ferrous sulphate (coppers).

The cyanide process, introduced on the

Rand in 1891, is now almost exclusively used for the recovery of finely divided G. It is extremely simple, and consists of allowing the finely crushed ores, concentrates, or slimes to stand in vats with a dilute solution containing from 0.05 to 0.3 per cent of potassium cyanide. After a day the solution is run off, and the G., which is in solution in the form of a double cyanide with potassium, is precipitated by zinc shaving or by electrolysis, not more than $1\frac{1}{2}$ grains of G. being left in each ton of solution. The metal obtained by any of the above methods is generally alloyed with silver, and contains small quantities of iron, lead, sulphur, etc.

Properties.—G. is a soft yellow metal, which appears red when seen by light many times reflected from its surface. In a finely divided state it appears purple and even black, and when gold-leaf is viewed by transmitted light it appears green. It is a very heavy metal (sp. gr. 19.4), melts at 1087°C. , boils at 2610°C. , and is volatile at the temp. of the electric arc. It has a specific heat of 0.0316, is a good conductor of heat and electricity, and is quite unaffected by air and most reagents. G. is the most malleable and ductile of metals, and may be beaten out into leaf having the thickness of only $\frac{1}{1000}$ of an in.; thus 1 grain of the metal may be made to cover 56 sq. in. of surface, or drawn into a wire 500 ft. long. It has little affinity for other elements, but is attacked by halogens and aqua regia, and is easily reduced from its compounds. Most metals when placed in a solution of a G. salt precipitate it, and all its compounds when ignited yield the metal. G. is readily deposited upon other metals by the process of electro-gilding, the most suitable solution being that of the double cyanide of G. and potassium ($\text{Au}(\text{CN})_2 \cdot \text{KCN}$). In the presence of the 2 chlorides of tin G. chloride forms a purple compound known to the ancients as purple of Cassius. Colloidal G. may be formed by Bredig's process of striking an arc between G. wires under water, or by reducing solutions of gold with phosphorus, formaldehyde, etc. For the purposes of coinage G. is alloyed with 2 parts in 24 of copper or silver to harden it against the wear and tear of circulation. For use in jewellery various alloys are employed, the 'fineness' being expressed in parts of pure G. in 24; thus 18-carat G. is composed of 18 parts of the metal alloyed with 6 parts of copper or silver as the case may be. The alloy most commonly used in Britain is 9 carat. On the Continent and in U.S.A. 14 carat is an accepted standard, though it is not used in Britain. Silver gives the alloy a paler, copper a redder, colour, than that of the pure metal. The chief alloys used by the jeweller are

Parts pure G.		
Red G.	= 75 + 25	parts copper
Dead leaf G.	= 70 + 30	" silver
Green G.	= 75 + 25	" "
Water-green G.	= 60 + 40	" "
Blue G.	= 75 + 25	" iron

The attempt to produce G. from base metals was the age-long goal of alchemy. Such a transmutation was entirely beyond the powers of the alchemists, however, and although modern work on the structure of the atom indicates that the problem is by no means insoluble, it is unlikely to become a commercial proposition, at any rate in the near future.

See also BULLION; CURRENCY; MONEY.
Gold jewellery in Britain.—For some years there has not been an official allocation of G. for the jewellery trade in Britain. Manufacturers are dependent on 'old gold,' i.e. metal produced from scrap articles melted down, and on G. they are able to buy on the 'free' market at a higher price than that set officially by the small group of London brokers to whom the task is entrusted. There is a gov. concession by which the official replacement is permitted of G. used in manufactured articles exported. G. remains the most popular metal for wedding rings, and it is widely used for other jewellery, such as lockets, bracelets, and chains.

Gold, Field of the Cloth of, see FIELD OF THE CLOTH OF GOLD.

Gold and Dollar Reserves. Before the war the gold reserve was held by the Bank of England to support the Gold Standard. Although the Gold Standard was abandoned in 1931, the gold reserve continued to be held by the Bank. In 1939 it was transferred to the Exchange Equalisation Account, which also holds the dollar reserve.

In the post-war period public attention has fastened on the G. and D. R. because the Brit. economy has been subjected to strain in the balance of payments and to sev. crises, one of which, in 1949, led to the devaluation of sterling. The reserves act as a shock absorber in the event of the balance of payments becoming adverse; they are then used to pay for imports (or meet other debits) that are not paid for by exports (or other credits). Immediately before the war the reserves were equal to about 10 months' value of imports; since the end of the war they have been equal to only some 3 or 4 months' value of imports. Not only has the shock absorber been much 'thinner' than before the war, but also the shocks received have been greater.

The following table shows the value of the gold and dollar reserves since the end of the war for each quarterly period:

End of quarter	U.S. million dollars	End of quarter	U.S. million dollars
1945 IV	2476	1948 I	2241
		II	1920
1946 I	2384	III	1777
II	2301	IV	1856
III	2682	1949 I	1912
IV	2696	II	1651
1947 I	2380	18 Sept.	
II	2410	1949*	1340
III	2383	III	1425
IV	2079	IV	1688

*Sterling devalued by 30 per cent.

End of quarter	U.S. million dollars	End of quarter	U.S. million dollars
1950 I	1984	1954 I	2685
II	2422	II	3017
III	2756	III	2901
IV	3300	IV	2762
1951 I	3758	1955 I	2667
II	3867	II	2680
III	3269	III	2345
IV	2335	IV	2120
1952 I	1700		
II	1685	1956 I	2277
III	1685	II	2385
IV	1846	III	2328
1953 I	2166	IV	2133
II	2367		
III	2486	1957 I	2209
IV	2518	II	2381

At the end of 1957 the reserves were 2273 million dollars. The increase in the value of the reserves in 1950 was due largely to their revaluation following the devaluation of sterling in 1949.

The gold reserves have been a rough barometer of economic conditions. When inflationary tendencies have got out of hand imports have risen and exports have fallen, and the reserves have tended to fall. When the authorities were able to check these tendencies imports fell off, exports revived, and the reserves tended to build up.

See BANK OF ENGLAND; CURRENCY; MONEY.

Gold-beating, see GOLD LEAF.

Gold Coast, see GHANA.

Gold Lace, fabric made of cotton or silk thread covered with fine metal wire, and much used for uniforms, theatrical dresses, etc., and eccles. purposes. The metallic wire employed is made from various substances. In the best qualities pure silver is used, but an alloy of copper and silver is more common, and for very cheap lace copper wire is employed. The wire is annealed and plated and then covered with pure gold leaf, which is made to adhere by heating to red heat in charcoal. In the cheapest varieties the copper wire is electro-plated with silver, and this again electro-plated with gold. The completed wire usually measures 1100 to 1400 yds to the ounce of metal, and is flattened by steel rollers before being wound over yellow silk or cotton thread by a spinning engine. Much gold thread is manufactured in India.

Gold Leaf, tissue of that metal, beaten out to 1/250,000 in. in thickness. It is beaten out to such a fineness for the purpose of gilding various surfaces. The art of gold-beating was known to the anc. Egyptians 5000 years ago, and the coffin case of An-Antef, king of Thebes (2000 bc), now in the Brit. Museum, is an example of Egyptian gilding that is comparable with the best modern work. It was practised by the potters and decorators of anc. Greece and Rome. In the *Odyssey* Homer describes how cattle were prepared for sacrifice by having their horns gilded with

beaten gold. From Pliny the Elder has come down the earliest account of gold-beating, the craft appearing in Rome c. 100 BC, when the exterior ornaments of the Capitol were gilded, a form of decoration that was soon adopted for other public buildings and villas. A Gor.monk of the 12th cent. outlines a process of gold-beating almost identical with that of to-day, and in the days of their prosperity the skilful Florentines were famous for the art. To-day the raw material of gold (24 carats) is melted down in lots of 60 oz., and

14-lb. hammer on huge blocks known as gold-beaters' stones. Finally the gold is taken out of the parcel by means of wooden pincers and cut into quarters with a sharp reed, then placed once more between very fine gold-beaters' skins $5\frac{1}{2}$ in. square, making a parcel approximately $1\frac{1}{2}$ in. thick but only a few oz. in weight. This time it is beaten with an 8-lb. hammer for about 3 hrs. The leaves are now approximately $4\frac{1}{2}$ in. square, ready for cutting and booking. Strip gold does not require beating, the gold being atomised on to a carrier, such as paper or viscose film, and wound on to a spool 40 in. wide and 300 ft long. This material is used to-day in place of ordinary gold leaf by book-binders. See also GILDING.

Gold Standard, currency system under which bank notes may be exchanged for gold at any time at a fixed rate. There have been 3 forms: full G. S.—the central bank is bound to redeem its notes in gold coin and also to buy and sell gold at a fixed price; gold bullion standard—no gold coins are in circulation and there is no redemption of notes, but the central bank is bound to buy and sell gold at a fixed rate (this was the Brit. system from 1925 to 1931); the gold exchange standard—the central bank does not buy and sell gold, but only drafts in foreign currencies on the gold or gold bullion standard. Free exportation and importation of gold, and free sale of foreign gold exchange, are necessarily linked up with the G. S.

Britain has twice left the G. S. since early 1914. The £ is now 'pegged'—other currencies, too—and we hear of 'scarce dollars.' The G. S. did not peg the £ but, by its adjusting mechanism, kept it steady within narrow limits. Under the G. S. if £s looked like being scarce abroad, a loan from London soon put matters right. A nation on the full G. S. buys and sells gold freely and arranges that its currency unit shall contain a certain fixed amount of gold. Britain was on such a standard before the First World War, the gold content of the sovereign being about $\frac{1}{4}$ oz. If wages and prices were too high, imports rose and exports fell off; the £ fell to its lower limit, where it became profitable to export gold; the Bank rate was raised and in the first place attracted gold and in the second place protected the Bank of England's gold reserves, on which the nation's money and credit structure was based, by setting in train a long-term deflationary effect that had the result of reducing wages and prices and making Brit. goods again competitive in the world's markets. Not every Bank rate rise, of course, was held long enough to have the secondary effect. The great advantage of the G. S. was that the merchant worked on the confident expectation that (e.g.) the £ would be worth 25·22 francs year in year out and that the effective price of goods ordered would be unaffected three months, six months, or more ahead by the rate of exchange. Under a Free Exchange on the other hand, while the merchant's



George M. Whiley, Ltd.

GOLD LEAF BEING BEATEN

small quantities of copper and silver are added according to the colour of gold required. The copper gives gold an 'orange' effect and the silver a lighter or 'lemon' appearance. It is melted in intense heat, poured into a mould measuring 11 in. by $1\frac{1}{2}$ in. by $\frac{1}{2}$ in. thick, and hardened into a bar, which is rolled under pressure to a ribbon $1\frac{1}{2}$ in. in width, $1/1000$ in. thick, and c. 330 ft in length. The ribbon is then cut into $1\frac{1}{2}$ -in. squares, placed between 4-in.-square pieces of french paper bound together by bands of parchment, and beaten, extending the $1\frac{1}{2}$ -in. pieces to 4 in. square. These are taken out, laid on cushions of calf skin and cut into quarters, and interleaved in 4-in.-square skins of ox intestine called gold-beaters' skins. The beating process continues for an hr and a half with a

requirements may be satisfied by the device of buying forward exchange, this solution is not available for long-term loans. While, however, under the G. S. the long-term lender may get his proper interest, and return of capital in full gold value, the value of gold itself has over the years varied considerably.

See CURRENCY; FREE EXCHANGE; MONEY.

Gold Stick, name of an officer in the royal household to whom the sovereign in person gives the parole and countersign, and who reports directly to the sovereign and the Army Council, as well as laying orders issued by the Army Council before the sovereign. The office was instituted in the reign of William IV, and is held in rotation for periods of a month at a time by the colonels of the 2 regiments of household cavalry.

Golden Age, phrase applied to the most prosperous and beautiful period of a country's hist., art, literature, etc. The idea originated with the Greeks. Hesiod divided the life of a race into 5 ages, of which the golden, or simple and patriarchal, age was the first. The theory was developed into a regular system of cosmic philosophy, which made Saturn the governing deity of the G. A.

Golden Ball, see GLOBE FLOWER.

Golden Bell, see FORSYTHIA.

Golden Bull, imperial edict issued by the Emperor Charles IV in 1356, which fixed the law in regard to the imperial elections, and provided that only 1 member of each electoral house should have a vote. It was so-called from the gold case enclosing the imperial seal (Lat. *bullā*) attached. Its effect was to strengthen the power of the electors, thus weakening that of the cities and lesser rulers.

Golden Calf, idol made by Aaron from the golden earrings of the Israelites while Moses was absent on Mt Sinai (Exod. xxxii). It is probable that the gold in thin plates covered a core of wood. Moses ground it small, then cast it into the brook and made the people drink the water (Ps. cvi. 19). The calf symbolised the fertility, strength, and majesty of Yahweh. Israel too was often represented as a calf (see Deut. xxxii. 15). Jeroboam I set up brazen calf-idols of Yahweh at Bethel and Dan in the 10th cent. The fact that these were not attacked by the N. prophets, Elijah, Elisha, Amos, etc., has led some to suppose that this Exod. episode is a later invention inserted to support the stricter outlook of the Deuteronomist writers. It is said that the calf is indicative of a settled agric. community, not of desert wanderers; but, of course, the Israelites had memories of Egypt, and of animal-worship there.

Golden Carp, see GOLDFISH.

Golden-crested Wren (*Regulus regulus*), smallest of European birds, belonging not to the family of the true wrens but to that of the Regulidae. The length of the body is about 3½ in., and the plumage is very beautiful. The back is greenish-yellow,

the wings and tail are ash brown, marked with black and white, and the cheeks and throat greyish white, while the crown feathers are elongated into a bright yellow crest. It is found all over Europe, and is not uncommon in Great Britain, particularly frequenting fir woods.

Golden-eye Fly (*Chrysopa perla*), or Lacewing Fly, common Brit. neuropterous insect. In colour it is pale green, with long antennae, gauzy wings, and bright yellow eyes. The length from the tip of the antennae to the tip of the closed wings is almost 1½ in. The eggs are attached to leaves, etc., by stalks; the larvae are rough and hairy and feed on aphides, and the pupa is enclosed in a white silky cocoon. The name is also applied to an allied species, the *C. vulgaris*.

Golden Fleece, see ARGONAUTS; JASON. **Golden Fleece**, Order of the see ORDERS OF KNIGHTHOOD; AUSTRIA (1).

Golden Gate, strait of California, U.S.A. It is 5 m. long and 1-2 m. wide, and connects the San Francisco Bay with the Pacific Ocean.

Golden Horde, Mongol-Tatar invaders of Europe in the 13th cent., led by Batu (q.v.), a descendant of Genghis Khan. They took their name from the state estab. by Batu in 1236 in E. Europe and W. Siberia, with Saray (q.v.) as its cap. In 1241 their progress was halted and they settled along the Volga, where, under Batu's son, their kingdom fl. At the end of the 14th cent. they were decisively defeated by Timur, and in the middle of the 15th cent. the state broke up into the Khanates of Kazan', Astrakhan', Crimea, and Siberia.

Golden Horn, narrow inlet of the Bosphorus, separating Constantinople from Galata (q.v.) and Pera. See ISTANBUL.

Golden Horn Bay, inlet of the Peter the Great Gulf (q.v.) of the Sea of Japan, on which stands the port of Vladivostok.

Golden Legend, medieval collection of lives of the saints, made by a Dominican, Jacobus de Voragine (c. 1230-98), who was for some years archbishop of Genoa. The collection is in 5 sections and contains 182 chapters. There is an Eng. trans. by G. Ryan and H. Ripperger, 1948.

Golden Number, The Meton's (q.v.) cycle shows the relation between the length of a lunar month and a tropical year. In 6939.69 days there are 235 lunations, taking the mean length of a lunation as 29.5306 days, and in 19 tropical years there are 6939.60 days, so that in 19 years there is a difference of about 2 hrs. Hence the same phases of the moon will recur on the same days of the month after 19 years. The first year of a cycle can be chosen arbitrarily, and the year 1 BC begins the cycle now in use. It is said that Meton had the years of the cycle inscribed in golden letters on a temple in Athens, and they were also inscribed by order of the authorities on the public monuments, hence the title 'Golden Numbers.' Remembering that 1 BC is, by our reckoning AD 0, it is obvious that if we add 1 to the year in which we want to find the G. N. and

divide by 19, the remainder will give the result. Take, for example, the year 1958; adding 1 to it and dividing by 19, the remainder is 2, and this is the G. N. (it is given on p. 1 of the *Nautical Almanac* for 1958). The G. N. and the Dominical Letters (q.v.) are important for finding the date of Easter; the Rom. Missal and the Book of Common Prayer give the method for calculating this date.

Golden Retriever, see RETRIEVER.

Golden Rod, or *Solidago virgaurea*, species of Compositae, native of Britain, Europe, Asia, and North America. The leaves of the plant have sometimes been used to make an infusion as a substitute for tea. The G. R. of gardens is the North Amer. *S. canadensis*.

Golden Rose, emblem wrought of pure gold, which is blessed by the Pope on Laetare Sunday, the 4th Sunday in Lent. Occasionally it is sent as a mark of papal favour to some Catholic prince or dignitary, to cities, churches, etc.

'Golden State', see CALIFORNIA.

Golden Stone, see CHRYSOLITE.

Golden Stool, symbol of Ashanti tribal confederacy. It is made of wood but plated and ornamented with gold. It was at first thought by Brit. administrative authorities to be a throne, but researches have shown that it is a sacred object enshrining the spirit of the Ashanti people. After the Ashanti wars and the dissolution of the tribal confederacy when a Brit. protectorate was set up, and the Ashanti chief, Prempeh (q.v.), was exiled, the G. S. disappeared. Hidden, the stool was the symbol of the continued but, as it were, underground life of the Ashanti nation under Brit. rule. The British having by 1921 come to realise the veneration in which the stool was held, no longer demanded its production as a throne, and in that year the governor of the Gold Coast stated that the British made no claim to the stool. The reward for this act of policy came in 1935 when another Prempeh, already king of Kumasi, was formally installed as king of Ashanti. The G. S. was publicly carried in procession before the Brit. governor at this installation. Thus the famous stool was, in effect, a declaration, significant because of its symbolic form, of the confidence of the whole Ashanti people in the British as guardians and protectors of their national well-being.

Golders Green, residential suburb of London which forms the S.E. corner of the bor. of Hendon, and borders on Hampstead. It includes a part of the Hampstead Garden Suburb (q.v.) and Cricklewood. G. Hill Park adjoins Hampstead Heath, and there is a crematorium for N. London.

Goldfinch (*Carduelis carduelis*), beautiful Brit. bird belonging to the Fringillidae. It is about 5 in. long, and the plumage of the adult male is a handsome mingling of black, crimson, yellow, and white. Its intelligence and pleasing song make it a favourite cage bird.

Goldfish, or **Golden Carp** (*Carassius auratus*), common fresh-water fish native

to China and Japan. In its natural state it is brown in colour, but when domesticated it develops the familiar red-gold tint, and occasionally becomes a complete albino, when it is known as the silver fish. It was introduced into England in 1691, and breeds freely in aquaria or ponds. The G. is a cold-water fish; plenty of oxygen is needed to maintain it in a healthy condition and it is necessary to keep the temp. of the water in aquaria from rising. Jap. breeders, starting with mutant forms, have developed certain bizarre varieties of G. Such types as 'pop-eye,' 'veil-tail,' or 'lion-head' are well known to aquarists.



GOLDFINCH

Goldie, Sir George Dashwood Taubman (1846-1925), administrator, b. Isle of Man; educ. at Woolwich and entered the Royal Engineers. In 1879 he formed the United African Company, which united the Brit. commercial interests in this part of West Africa. In 1886 a charter was granted to the company, which became the Royal Niger Company, with Lord Abderare as governor and G. as vice-governor. G. was made privy councillor in 1898. See Lady Dorothy Wellesley, *Sir George Goldie, Founder of Nigeria*, 1934.

Goldilocks, see LINOSYRIS.

Golding, Arthur (1536-1606), Brit. translator, was educ. at Jesus College, Cambridge. He is chiefly remembered for his trans. of Caesar's *Gallie War*, 1565, and, above all, Ovid's *Metamorphoses*, 1565-7, of which Shakespeare made use. He also trans. Justin's *History* and part of Seneca. His half-sister married the earl of Oxford. See L. T. Golding, *An Elizabethan Puritan*, 1937.

Golding, Louis (1895-), novelist, b. Manchester, which figures as 'Doomington' in his novels. Educ. at Manchester Grammar School and Oxford, he served in the First World War and then travelled extensively, writing of his experiences in *Sunward*, 1924, *Sicilian Noon*, 1925, and *Those Ancient Lands*, 1928. His novels include *Seacoast of Bohemia*, 1923, *Day of*

Atonement, 1925, *The Miracle Boy*, 1927, *Store of Ladies*, 1927, *Magnolia Street*, 1931, *Five Silver Daughters*, 1934, *The Camberwell Beauty*, 1935, *Mr Emmanuel*, 1939, *The Glory of Elsie Silver*, 1945, and *To the Quayside*, 1953. He also pub. a study of James Joyce, 1933, and sev. vols. of verse.

Goldmark, Karl (1830-1915), Austro-Hungarian composer, b. Keszthely; went to Vienna to study music in 1844. In 1857 he gave a concert of his own works. His first opera, *Die Königin von Saba*, was produced at Vienna in 1875, and was followed by *Martin*, 1886, and *The Cricket on the Hearth*, after Dickens, 1900. His descriptive symphony *Ländliche Hochzeit*, 1887, and some of his overtures—*Sakuntala*, *Penthesilea*, *In the Spring*, *In Italy*—once had a great vogue. See his memoirs, 1923, and monograph by O. Keller, 1901.

Goldoni, Carlo (1707-93), It. dramatist, b. Venice. He studied for the law, but early began dramatic writing. His first attempts were tragedies (*Amalasunta* and *Belisario*, 1734); but he soon turned to comedy, and succeeded in creating a new school, based upon character and domestic life, in place of the old improvised farce. He wrote some 250 plays, including libretti for operas, among which are *Momolo cortesan*, 1738, *La Donna di Garbo*, 1743, *La Locandiera*, 1753, *Il Bugiardo*, 1760, *I Rusteghi*, *Il Venaglio*, 1763, and *Le Bourru Bienfaisant* (in Fr.), 1771. A collected ed. appeared at Venice in 1788-9, and a selection was trans. into Eng. in 1792. Later eds. of his complete works were pub. at Venice, 1907, and Milan, 1935. His letters, ed. by E. Masi, were pub. in 1907. See E. Gimmelli, *La Poesia di Carlo Goldoni*, 1941. See also his own memoirs, 1787, and lives by P. G. Molmenti, 1879; P. G. Galanti, 1883; C. Rabany, 1896; and H. C. Chatfield-Taylor, 1913.

Goldring, Douglas (1887-), novelist, b. Greenwich. Educ. at Fletsted and Oxford, he worked on the *English Review*, and in 1910 founded and ed. *The Tramp*, which was famous for its verse contributors. His own vols. of verse include *A Country Boy*, 1910, and *In the Town*, 1916. Among his novels are *The Permanent Uncle*, 1912, *The Fortune*, 1917, *Nobody Knows*, 1923, *The Cuckoo*, 1928, *The Façade*, 1927, *Margot's Progress*, 1929, and *Facing the Odds*, 1940. He also wrote lives of Ford Madox Ford, 1948, and Sir Thomas Lawrence, 1951, as well as many books of travel. *Life Interests*, 1948, is a vol. of reminiscences.

Goldsboro, city of North Carolina, U.S.A., in Wayne co., situated on the Neuse R., about 45 m. SE. of Raleigh. It is a bright-leaf tobacco market. The manufs. are knitted goods, cottons, lumber, furniture, and agric. tools. Fruit and vegetables are largely cultivated. Pop. 21,454.

Goldschmidt, Madame, see LIND, JENNY.

Goldsmith, Oliver (1728-74), poet, playwright, essayist, novelist, b. Pallasmore, Longford, son of a Protestant clergyman.

At the age of 8 he had an attack of small-pox which left him partially disfigured. Educ. at local schools, he went as a sizar to Trinity College, Dublin. From there he ran away after being involved in a college riot, but returned and took his B.A. in 1749. After discarding plans to be a clergyman or lawyer he went to Edinburgh and studied medicine in desultory fashion, then went abroad to carry on his course at Leyden. For 2 years he roamed on foot over the Continent, paying his way by playing the fiddle. In the course of this travesty of the Grand Tour he got a medical degree, probably at either Louvain or Padua. In 1756 he returned to London, and reached



OLIVER GOLDSMITH

his lowest state of destitution, trying many different jobs in turn—apothecary's assistant, schoolmaster, proof-reader, as well as doctor. In 1758 his first book appeared, a trans. from the Fr. entitled *Memoirs of a Protestant Condemned to the Gallies of France for his Religion*. He now prepared to accept the offer of a post as factory surgeon on the Coromandel coast, and to raise funds he pub. *An Enquiry into the State of Polite Learning in Europe*, 1759. The overseas offer fell through, but his prospects brightened as his writings became known. His earliest essays appeared in *The Bee*, a short-lived magazine which he started at this time.

The year 1761 may be taken as a decisive point in his literary career. In that year his 'Chinese Letters' appeared in John Newbery's *Public Ledger*, later to be pub. as *The Citizen of the World*, a delightful series of shrewd but good-natured reflections on life. In this year also G. made the acquaintance of Dr Johnson, and shortly afterwards he became an original member of The Club, which contained, in addition to those two, Reynolds, Burke, and Garrick. Meanwhile G. completed *The Vicar of Wakefield*, which was, however, retained in

manuscript for some unknown reason by the publisher, and did not appear till 1766. Written in G.'s usual pleasant unobtrusive style, this idyllic novel, with its effective character-drawing, had an important place in the development of 18th-cent. fiction, and has always had an assured place among Eng. classics. In 1764 appeared G.'s first long poem, *The Traveller*, a blend of the didactic and the descriptive which estab. his reputation as a poet. It did not, however, provide a livelihood; for this he depended on such hackwork productions as his lives of Voltaire, 1761, Beau Nash, 1762, and Parnell, 1770, and hist. of Rome, 1769, England, 1771, and Greece, 1774. He also essayed drama, and showed himself a worthy follower of that tradition of Anglo-Irish comedy which extends from Steele to Wilde. *The Good Natur'd Man* was produced at Covent Garden in 1768 with fair success, to be followed 5 years later by *She Sloops to Conquer*, one of the most delightful comedies in Eng. literature, which still holds the stage. In 1770 he pub. his finest poem, *The Deserted Village*, at one time said to be the most-quoted piece in Eng. The lighter vein of humour which he handled with such ease was shown in his unfinished *Retaliation*, a series of epigrams on his friends, ostensibly a retort to Garrick's description of him as one 'who wrote like an angel and talked like poor Poll.' In it Burke, Garrick, and Reynolds are hit off in playful lines without malice.

The portrait of G. has suffered partly from the pen of Boswell, who used him as a foil to Johnson, but it must be admitted that socially he was unimpressive; he did not shine in conversation, and often lacked dignity. Irresponsible, improvident, always in money difficulties, he was generous to every hard-luck story that came his way; and when he d. of fever, £2000 in debt, the stairs to his lodgings were thronged by a mourning crowd of people whom he had helped. As a writer he was amazingly versatile, so that Johnson's Lat. epitaph 'He touched nothing he did not adorn' was no more than deserved. Original, humorous, whimsical in his play of fancy, he wrote with such a deceptively simple style that he made the business of writing fluent, attractive prose seem ridiculously easy, until others attempted to imitate him. Greatest as an essayist, for even his novel belongs to this reflective branch of literature, as a poet he was one of the most human representatives of the 18th-cent. classical convention. It was Dr Johnson, no ready dispenser of compliments, who passed the final verdict, 'Let not his frailties be remembered; he was a very great man.' His *Miscellaneous Works* were pub. in 1775; his *Collected Letters*, ed. by Katharine C. Balderston, 1928, who also wrote his life, 1926. Other lives are by J. Prior, 1837; Washington Irving, 1844; J. Foster, 1848; W. Black, 1878; A. Dobson, 1888; F. F. Moore, 1910; T. Scott, 1928; and S. Gwynn, 1935.

Goldsmith's Art and Work. The work-

ing of the precious metals, and notably of gold, has been practised with considerable skill by man from very early times. The anc. Egyptians have left many remains of cloisonné work and moulded ornaments, in which they specially excelled, as well as numerous round platted chains. The personal gold jewellery found in Egyptian sarcophagi, sometimes dating as early as 2000 BC, includes necklaces, rings, bracelets, and hair ornaments. Both design and execution are excellent. Some of the work is inlaid with precious stones, and there are examples of filigree (q.v.) and of granulated gold work. Assyrian art gives plentiful evidence of the existence of the goldsmith's art among that people, but the actual remains hitherto discovered have been slight. Phoenician goldwork has been found in considerable quantities



Ashmolean Museum

FACSIMILE OF REPOUSSÉ GOLD CUP WITH VERTICAL SPRAYS, FROM MYCENAE

in Cyprus and Sardinia. Among its distinguishing features are delicate filigrees of gold wire on a gold ground, the use of grain ornaments, relief, and inlaid work, while the articles include all kinds of jewellery for personal adornment, as well as weapons, etc. Crete and Mycenae have yielded wonderful examples, gold cups, inlaid dagger blades, etc. See *AEGEAN CIVILISATION*.

Early Gk jewellery is chiefly of pure gold, usually beaten very thin and delicately ornamented with filigree or granulated work. Gk filigree work from the 6th to the 3rd cent. BC shows this art in its highest perfection. Other distinguishing features are fretwork, wave ornament, and the guilloché, and the work is more notable for its exquisite workmanship than for any marked individuality in design and treatment. Etruscan goldwork is directly derived from the Greek, and at its best is scarcely distinguishable from it, being particularly good in filigrees and granulated surfaces. The later Etruscan work is more florid and diffuse than good Gk designs. Rom. jewellery is also mainly an imitation of Gk forms, though it tends to the larger use of precious stones and of plain surfaces. The early Teutonic nations showed

considerable skill in sev. kinds of goldsmith's work. A.A.S. remains include jewels of many varieties which show filigree work, pierced gold sheets, cloisonné work, and beaded and twisted gold. The celebrated gold and enamel Alfred Jewel (Ashmolean Museum) is an example. Conventionalised animal forms are largely used. The Celtic peoples, notably the Irish, were skilful and artistic workers in gold. The Tara brooch is a very famous example of Irish work, which is distinguished by the use of filigree of curiously complicated knotted designs, hammered work with repoussé details and fillings-in of enamels, etc., and chased lines. In medieval times the goldsmith's art was highly honoured in all European countries. Early medieval jewellery was mainly massive and simple in design; the later examples are largely in cast work, ornamented with enamels and precious stones, bosses, and borders of filigree. A famous Eng. example is the Darnley Jewel. In Italy, notably in Florence during the 15th cent., the greatest sculptors and painters worked in gold and silver, Donatello and Botticelli among them. The demand for luxurious plate later encouraged such an artist-craftsman as Benvenuto Cellini (q.v.), whose salt cellar of hammered and cast gold for Francis I (Vienna) is a masterpiece. The art declined during the 17th and 18th cents., the traditional forms being often combined with most incongruous effects, but a revival of goldsmith's work has lately begun, with excellent results. The Worshipful Company of Goldsmiths has successfully fostered the craft in Britain since the end of the Second World War, though goldsmiths and silversmiths were adversely affected for some years by the high purchase tax on their wares. The preparation of the gold by alloying and colouring, and the manuf. of jewellery is largely carried on in Clerkenwell (London), Birmingham, Paris, Vienna, and Berlin. Some very delicate and beautiful work still comes from E. countries, notably from India. See JEWELLERY; SILVERSMITH'S WORK. See J. Lessing, *Gold und Silber*, 1907; M. Rosenberg, *Geschichte der Goldschmiederei auf technischen Gründen*, 1910-25; S. J. Churhill, *Goldsmiths of Italy*, 1926; L. Weaver, *Art in Industry and Salesmanship*, 1929; A. H. Leo, *Works of Art in Silver and other Metals*, 1936; H. C. Bainbridge, *Peter Carl Fabergé*, 1949; R. F. Jessup, *Anglo-Saxon Jewellery*, 1950.

Goldsmiths' Company, one of the 12 greater livery companies of the city of London. Mention of the G. among the adulterine crafts occurs about 1180, and the G. C. was incorporated in 1327. Among its early duties, which it still executes, were the trial of the pyx and the hallmarking of gold and silver wares. An antique plate committee deals with gold and silver wares which contravene the hallmarking laws. The early bankers were all members of the G. C. The company has been, and still is, a great educational benefactor, and the G.

Library of Economic Literature in the Univ. of London was its gift. The company also furthers the interests of the trade by exhibitions of plate both at home and abroad. See PYX, TRIAL OF; HALL MARKS.

Goldstücker, Theodor (1821-72), Ger. Sanskrit scholar, studied under A. W. von Schlegel, Lassen, and Burnouf. In 1852 he became prof. of Sanskrit in the Univ. College, London. He assisted Prof. Wilson in a new ed. of his Sanskrit Dictionary, but his most important work was *Panini, his place in Sanskrit Literature*, 1861. He ed. sev. Sanskrit works. His numerous articles were collected and re-ed. posthumously in 2 vols. (*Literary Remains*, 1879).

Goldwyn, Sam (1882-), Amer. film producer; b. Warsaw, Poland, the son of Abraham Gold'ish, he later took the name of G. He went to the U.S.A. in 1896 and started in the glove manufacturing business. He became a naturalised Amer. citizen in 1902. His entry into the film industry in 1913 was as an associate of Jesse Lasky and Cecil B. de Mille in Lasky Feature Photoplay. He afterwards became chairman of the Famous Players Lasky Corporation. In 1918 he resigned and formed the G. Pictures Corporation. His interest in this was sold in 1924 to Metro-G.-Mayer, and from 1927 to 1940 G. was director of the United Artists' Corporation. G. has a large number of highly successful productions to his credit, among which special mention should be made of *Stella Dallas*, 1925, *Whoopie*, 1930, *Wuthering Heights*, 1939, and *The Best Years of Our Lives*, 1946, this last receiving the Motion Picture Academy award. Indefatigable in his search for new talent, G. was responsible for introducing a number of actors and actresses to films who afterwards became celebrated.

Goleniów (Ger. Gollnow), tn of Poland, in Szczecin prov., on the lina, 15 m. NE. of Szczecin (q.v.). Until 1945 it was in Pomerania (q.v.). At the end of the Second World War the Ger. pop. left. Pop. 5000.

Goletha, tn on the Gulf of Tunis, and connected with the city of Tunis by a canal and by rail. The importance of the tn as a port has been diminished by the opening of the ship canal which connects with Tunis. It is well fortified. Stones from the ruins of Carthage were used in the construction of many of its buildings. In 1535 Charles V captured it from the Turks, by whom it was retaken in 1574. Pop. about 7000.

Golf, game of Scottish origin, dating back at least to the middle of the 15th cent. Also called *goff* and in vulgar Scots *gowff*, but almost certainly deriving its name from the Ger. word *kolbe*, meaning club.

Games of club and ball are common to all countries. At their simplest the contests take the form of trying to see who can hit the ball furthest with a single stroke, as in the primitive version of the Fr. game of *pall-mall*. The next development

consists in trying who can cover a much longer distance in the fewest number of strokes, as in the Flem. game of *chole*. Or the game may be made a test of accuracy by the ball having to strike a mark, as in the Dutch game of *kolven*, in which the marks take the form of 2 wooden posts set up opposite one another in a prepared court. (This is the game which figures frequently in 17th-cent. Dutch pictures of scenes on the ice and is sometimes mistaken for a form of G., to which, however, it has only a superficial resemblance.) A still further development is achieved when 2 sides oppose one another in the attempt to reach 2 opposite marks or goals, as in the various forms of hockey, hurley, shinty, etc. The Scottish game alone presents the combination of hitting for distance with the final nicety of approach to the exiguous mark afforded by a hole in the ground of 4½ in. in diameter, and the essential idea of the independent progress of the contestants, each playing his own ball, free from any interference by the adversary, and with no one to blame for his mistakes but himself.

Up to the middle of the 18th cent. the emphasis was still on hitting for distance. The original links at Leith, at that time the metropolis of the golfing world, had only 5 holes, of lengths varying from 414 to 486 yds, 3 'turns' of the 5 holes constituting the accepted 'round.' Players had to put up with any natural roughness of the 'lies' in which the ball came to rest, and even the putting greens—the ground immediately around their goal on which the players attempted the final short strokes to get the ball into the hole-*tin*—underwent no other preparation than was afforded by the choice of a particularly velvety and succulent patch of turf which would be kept short by the teeth of the rabbits. The offer of trophies for ann. competition at various G. centres led to the formation of the first properly constituted clubs, the Honourable Company of Edinburgh Golfers, 1744, the Royal and Ancient Golf Club of St Andrews, 1754, the Royal Blackheath Golf Club, 1766, and the Royal Musselburgh Golf Club, 1774, which gradually accepted a vague responsibility for looking after the condition of the links over which they played. The deterioration of the Leith links and the growing fame of St Andrews, brought about the universal imitation of the St Andrews round of 18 holes of widely varied lengths. The introduction of balls of gutta-percha in 1848 greatly increased the popularity of the game, for the 'gutties' cost less than a third of the price of the balls of leather stuffed with feathers which they superseded, their greater durability made possible the use of iron-headed clubs for the strokes up to the green, and their more perfect sphericity set up new standards of skill in the holing out. The invention of the rubber-cored ball in 1902, by greatly increasing the distance to which the ball could be struck, also enforced the need for greater care in the design and preparation

of the ground over which the game has to be played.

The Game.—In a modern first-class course a total length of 6000 to 7000 yds is made up of 18 holes (or of 9 played twice over to make up the 'round') varying in length from 100 to 600 yds. At each hole the player strikes off from a level platform or 'tee' and for this initial stroke is permitted to have the ball raised clear of the ground by teeing it on a wood or plastic 'peg.' His first stroke will normally have to 'carry' a stretch of unfavourable ground ('rough') in the form of sand-dunes, heather or gorse, or merely long grass, in order to reach a strip of good turf ('fairway') running onward with further 'rough' or trees on each side of it to catch a crooked shot. At the 'two-shotters,' which form the majority of the holes, the drive will be followed by a 'second' or an 'approach' played from the fairway to the 'putting-green' (or more simply 'green') of close-mown turf surrounding the hole-*tin*. This will usually be guarded more or less closely by shallow pits of sand ('bunkers') or other 'hazards' to catch an ill-directed shot, and should not be absolutely level but slightly undulating, in order to test the players' skill in judging the line of the 'putts' with which he first rolls the ball up near to the hole and then strokes it actually into it. On an average course the series of 'two-shot holes,' of lengths ranging from, say, 250 to 480 yds, will be varied by the inclusion of 4 or 5 'short' holes at which the player is expected to put the ball on the green with his first shot, and a couple of 'long' holes of 500 yds or over, at which the player will often require 2 full shots and some sort of approach in addition, to take him on the green. The contest may either take the form of 'match play' between opposing players or opposing sides of 2 players each, the result of each hole being decided by itself, and victory going to the player or side winning the greater number of holes, or of 'stroke play' in which any number of competitors can go out in twos or threes, the winner being the player with the lowest aggregate of strokes for the round. The implements of the game have in modern G. become standardised. The ball must not be more than 1·62 oz in weight nor less than 1·62 in. (in America 1·68 in.) in diameter. The number of clubs each player may have available for use is limited to 14; a typical 'set' might consist of 'woods' (i.e. wooden-headed clubs) Nos. 1 to 4 ('driver,' 'brassie,' and 2 'spoons'), 'irons' (i.e. iron-headed clubs) Nos. 1 to 9 of graded degrees of 'loft' from faces set at an angle of 15 degrees to the perpendicular in the case of the No. 1 to something like 50 degrees in the case of the No. 9, and a 'putter' for holing out—the only club which is still produced in a great variety of styles and shapes to meet individual idiosyncrasy.

Leading Events.—The Open Championship, instituted by the Prestwick Club in 1860, remained for 30 years a monopoly of

the Scottish professionals from the 2 great nurseries of St Andrews and Musselburgh. The year 1894, which saw the event held for the first time on an Eng. links—Royal St George's, Sandwich—also produced the first victory for an Eng.-b. professional, J. H. Taylor, and from that year up to the break caused by the First World War, the Championship became the field of rivalry for the members of 'the Great Triumvirate,' Taylor representing England, James Braid, Scotland, and Harry Vardon the Channel Is., who between them won the title 16 times in the

times, and Harold H. Hilton, who won it 4 times in the first 3 decades. After the First World War came a period of successes for the Oxford Univ. amateurs, Cyril Tolley, Sir Ernest Holderness, and Roger Wethered, but from 1934 onwards the Championship has become a happy hunting ground for the U.S.A. amateurs, who have won considerably more than half of the contests from that date. When the 18-year-old schoolboy, John Beharrell, in 1956 became the 'youngest ever' holder of the title, he was the first Eng. winner for 33 years.



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THE HOME OF GOLF: THE EIGHTEENTH GREEN AND THE CLUB-HOUSE OF THE ROYAL AND ANCIENT GOLF CLUB OF ST ANDREWS

ensuing 21 years. The period following the First World War was remarkable for a string of 12 victories in 13 years for players from the U.S.A., Walter Hagen with 4 wins and the great amateur golfer Bobby Jones with 3, being the chief contributors to this total. The run of overseas successes was brought to an end by the victory in 1934 of Henry Cotton, who won again in 1937 and after the Second World War in 1948. This has been followed by a period of success for players from the Commonwealth countries, 'Bobby' Locke, from S. Africa, being the winner in 1949, 1950, 1952, and 1957, and the Australian Peter Thomson setting up a record for the present century by 3 successive victories in 1954, 1955, and 1956.

The Amateur Championship, inaugurated by the Royal Liverpool Club in 1886, produced 2 outstanding golfers from that Club in John Ball, who won the event 8

The international interest of G. was enhanced by the inauguration after the First World War of matches between the Brit. Isles and the U.S.A. for the Walker Cup (amateur), Ryder Cup (professional), and Curtis Cup (ladies). Each of these is played bi-annually and in the 2 countries alternately. The only Brit. victory in the amateur international was in 1938. In the professional matches each side won on its own ground up to 1935; from 1937 onwards the U.S.A. was victorious, but Great Britain scored a notable victory in 1957. The Brit. ladies have in recent years done well in the Curtis Cup contests, being winners on the last 2 occasions on their home ground, in 1952 and 1956.

A further step in the development of international G. was the institution in 1953 of the Canada Cup Tournament, contested by stroke play by teams of 2 professionals from each of the competing countries. The event is held in a

different country each year, the winning countries in the first 4 years being: 1953, Argentina; 1954, Australia; 1955, U.S.A.; 1956, U.S.A.; 1957, Japan. The tournament of 1957 at Tokyo, Japan, was contested by 30 nations.

In the years immediately following the Second World War, the only breaks in the run of American triumphs were due to the prowess of the Irish amateurs, James Bruen, 1946, Max McCready, 1949, and Joe Carr, 1953, who each in turn scored a notable victory over an Amer. opponent in the final.

The standard of women's G. has been raised out of all knowledge since the Ladies' Championship was instituted in 1893. Miss Cecil Leitch, winner of the Championship in 1914, 1920, 1921, and 1926, and Miss Joyce Wethered, winner in 1922, 1924, and 1925, taught the world that women's G. could be as accurate as the men's, though on a slightly smaller scale from the point of view of length. The Brit. girls have been more successful than the men in defending their title against Amer. invaders, but the list of recent winners indicates the international character of the event: 1949, Miss Frances Stephens (England); 1950, Viscomtesse de Saint Sauveur (France); 1951, Mrs P. C. McCann (Ireland); 1952, Miss Moira Paterson (Scotland); 1953, Miss Marlene Stewart (Canada); 1954, Miss Frances Stephens (England); 1955, Mrs Jessie Valentine (Scotland); 1956, Miss Margaret Smith (U.S.A.); 1957, Miss Philomena Garvey (Ireland).

The traditional description of G. as 'the Royal and Ancient Game' is justified by the fact that it was the pastime of 7 successive monarchs of the Stuart line, James IV and James V of Scotland, Mary Queen of Scots, James I, Charles I, Charles II, and James II of the U.K. In more recent times the connection of G. with the royal house was revived by the patronage extended by King William IV and his consort Queen Adelaide to the Royal and Ancient Club of St Andrews. Edward VIII (Duke of Windsor) and his brother George VI, both keen and capable players, maintained the old tradition, as did King Leopold of the Belgians on the Continent, and in the U.S.A. G. has become so accepted as the sport of Amer. presidents that skill in the game has almost become a selling point in their election campaigns. See H. G. Hutchinson, *Golf* (Badminton Library), 1935; C. J. H. Tolley, *The Modern Golfer*, 1924; Abe Mitchell, *The Essentials of Golf*, 1927; Peter Lawless (editor), *The Golfer's Companion*, 1937; Henry Longhurst, *Golf*, 1937; Henry Cotton, *This Game of Golf*, 1948, and *My Swing*, 1952; Robert Browning, *A History of Golf*, 1955.

Golgotha, see CALVARY.

Gollad, vil. in the co. of the same name in the state of Texas, U.S.A. It is situated on the N. bank of the San Antonio. It is an important railway centre and has cotton mills and flour mills. It played an important part in the Texan War of Liberation. Pop. 1800.

Goliath, champion of the Philistines who challenged the hosts of Israel to combat. The boy David slew him with a stone from his sling (1 Sam. xvii). In 2 Sam. xxi. 19, G. is said to have been killed by Elhanan. Either 1 Sam. xvii originally left the Philistine giant anonymous and the name G. is a later erroneous gloss, or 1 Chron. xx. 5 is right in making Elhanan's victim G.'s brother. See ANAKIM.

Goliath Beetle, found in tropical and South Africa, is so called from its giant size, the male of the largest variety, *Goliathus druryi*, being as much as 4 in. in length. It is a lamellicorn beetle, belonging to the Scarabaeidae. Its size and velvety-black hue, often diversified with white markings, make it a splendid insect.

Gollus (or Gool), **Jacobus** (1596-1667), Dutch orientalist, studied under Erpenius, and in 1624 succeeded Erpenius at Leyden, where he also occupied the chair of mathematics. He also studied theology, philosophy, medicine, and classical philology. During 1625-9 he visited Syria, Mesopotamia, and Constantinople, where he collected numerous Arabic MSS. He wrote many works on oriental subjects, the chief being the *Lexicon arabicum-latinitum*, 1653.

Gollanez, **Sir Hermann** (1852-1930), Jewish rabbi and Semitic scholar, b. Bromen, brother of Sir Israel G. Educ. at Univ. College, London, and prof. of Hebrew there from 1902 to 1923. Minister at the Bayswater Synagogue from 1892 to 1923. First rabbi to be honoured with a knighthood, 1913.

Gollanez, **Sir Israel** (1864-1930), scholar, b. London. Educ. at the City of London School, Univ. College, London, and Christ's College, Cambridge, he was lecturer in Eng. at Cambridge from 1896 to 1906 and thereafter prof. of Eng. at King's College, London. Fellow and secretary of the Brit. Academy from its foundation in 1902, he was also a director of the Early English Text Society and president of the Philological Society. In 1891 he pub. an ed. of *Pearl*, and in 1895 one of the *Exeter Book* (q.v.). He was also general editor of the *Temple Classics*, the *Temple Dramatists*, and the original *Temple* ed. of *Shakespeare*. He was knighted in 1919. See memoir by Sir F. G. Kenyon, 1932.

Gollanez, **Victor** (1893-), publisher, b. London, and educ. at St Paul's School and New College, Oxford. He estab. his publishing house in 1927 and is also known as a speaker and writer on political affairs. See his autobiographies *My Dear Timothy*, 1952, and *More for Timothy*, 1953.

Gollnow, see GOLENIÓW.

Golomynka, a cottid fish which is only found in Lake Baikal, E. Siberia. It exudes oil from every part of its body, has no scales, and is flabby to touch. Its scientific name is *Comephorus baikalensis*.

Golovnin, **Vasily Mikhailovich** (1776-1831), Russian vice-admiral, a great navigator who explored the coasts of Kamchatka and of Alaska. In 1801-6 he served as

a volunteer in the Eng. navy. During his voyage to the Far E. in 1807-9 his ship was kept by the English at Capetown for over a year. In 1811 he was captured by the Japanese and remained prisoner until 1813. In 1817-19 he circumnavigated the globe. From 1823 he was lieutenant-general of the Russian navy, building over 200 warships including the first 10 Russian steamships. His works include *Narrative of my Captivity in Japan*, 1816 (Eng. ed., 3 vols., 1824), and *Journey Round the World*, 1822.

Goltz, Colmar, Freiherr von der (1843-1916), Ger. field-marshal and military author, b. Bielkenfeld, E. Prussia, son of Erhard, Baron von der G. In Franco-Prussian war, 1870-1, general staff officer in Second Army. In 1871 in 8th Regiment, and became teacher in School of War, Potsdam. Taught war hist. at War Academy. In 1883 transferred services to Turkish Gov., for whom he conducted dept. of military education till 1896. Reorganised Turkish Army, 1908-10. Field-marshal, 1911. General inspector of 2nd Army Corps until retirement from army, 1913. When Germans advanced into Belgium, Aug. 1914, G. became military governor of that country. In April 1915 took command of First Turkish Army in Mesopotamia, where he fought Gen. Townshend in Dec., and drove him back at Kut-el-Amara. D. at Turkish H.Q. near Baghdad, 19 April 1916. Works include *Die Operationen der II Armee bis zur Capitulation von Metz*, 1874, *Leon Gambetta und seine Armen*, 1877, *Das Volk in Waffen*, 1883, 6th ed. 1925, *Krieg- und Heerführung*, 1901, and *Von Jena bis Preussisch Eylau*, 1907. See life (with letters) by von Schmittlerow, 1925.

Goltzius, Hendrik (1558-1617), Dutch engraver and painter, b. Mülbrecht, and after working for some years in Holland made a tour through Germany and Italy in 1590, remaining for the rest of his life at Haarlem. His engravings show great technical excellence, and some of his portraits are very fine. Much of his work is a slavish imitation of Michelangelo, whom he greatly admired. See study by O. Hirschmann, 1919, 1921.

Gomal, see GUMAL PASS.

Gomarus, or Gomar, Franziskus (1563-1641), Protestant theologian, b. Bruges; he was educ. in the faith of the Reformed Church in Germany, whence he crossed to England and graduated at Cambridge. He became prof. of theology at Leyden and opposed Arminius. On the victory of the latter's views he forsook Leyden, and after an interval became prof. of theology at Saumur. A posthumous work, *Lyra Davidis*, appeared in 1645. See monograph by G. P. van IJterson, 1930.

Gomberville, Marin le Roy (1600-74), Fr. novelist, b. Paris. His great work, *Polixandre*, appeared 1632-7. Amongst his other works are *La Cythère*, 1640-2, and *La jeune Alcidiade*, 1651. His novels are mostly romances of adventure, set in far-off countries. He was one of the earliest members of the Fr. Academy.

Gombo, see OCHRA.

Gomel': 1. Oblast in SE. Belorussia, situated largely in the Poles'ye (q.v.) and covered with coniferous forests and marshes. It has large deposits of peat and salt. There is rye and potato growing, hog and cattle raising, engineering, lumbering, and wood-processing industries. The prin. tns are G., Moxyr. Pop. 1,323,000, Belorussian and Russian (before the war also Jewish).

2. Cap., economic and cultural centre of the above. Engineering, chemical, and clothing industries. Important transportation centre (5 railway lines). Famous palace of Prince Paskevich. Known since 12th cent.; from 1537 Lithuanian; since 1772 again Russian. Included in Belorussia 1926. Largely destroyed during Second World War. Pop. (1956) 144,000 (1897, 37,000; 1926, 86,000; 1939, 144,000), prior to Second World War half Jewish.

Gomera, one of the Canary Is., in the prov. of Santa Cruz de Tenerife (q.v.), lying W. of Tenerife. It is mountainous but fertile. Its cap. is San Sebastián de la G. Area 146 sq. m.; pop. 30,000.

Gomez, Diego (fl. 15th cent.), Portuguese navigator and writer on discovery, was forgotten until his chronicle was pub. by Schmeller in 1847 from MS. in the State Library at Munich. In 1458 Prince Henry the Navigator equipped the *Wren* and 2 other caravels, with which G. sailed up the Gambia 'as far as Cantor.' G. was sent by King Alfonso in the same direction in 1460, when he explored the Cape Verde and Canary Is. G. had been made receiver of customs at Cintra in 1440. In 1466 he was made a judge there, and his office was confirmed in 1482.

Gomez, Juan Vicente (1865-1935), Venezuelan statesman and soldier, an Andino of mixed descent. He was the ruling force of Venezuela after 1908, raising it from one of the lesser South Amer. reps. into a Caribbean power (based on the exploitation of petroleum, begun c. 1918). He succeeded Cipriano Castro as president, and soon restored the country's financial position. In 1922 he agreed to accept office for a second term, but in 1929 refused to stand.

Gomm, Sir William Maynard (1784-1875), Brit. soldier, son of Lt.-Col. Wm G., killed at Guadaloupe in 1794. Fought in Holland under the duke of York, 1799, was with Wellington in the Peninsular war, and on Moore's staff at Corunna. Took part in most of the battles of the Peninsular war, and was one of the most trusted men of Wellington's staff. Served in the 5th Brit. Div. in the Waterloo campaign. Commander-in-chief in India, 1850-5; field-marshal, 1868; Constable of the Tower, 1872 until his death. See *Letters and Journals*, pub. by F. C. Carr-Gomm in 1881.

Gomme, Sir George Laurence (1853-1916), statistician and antiquary. Educ. at the City of London School. At one time he ed. the *Antiquary*, the *Archaeological Review*, and the *Folklore Journal*. His interest in old-time customs and

superstitions was early awakened, and in such books as *Primitive Folk-Moors*, 1880, *Chap-books and Folklore Tracts*, 1885, and *Folklore as an Historical Science*, 1908, he exhibited the results of his investigations. He founded the Folklore Society, and served it in many capacities—including that of president. He entered the service of the Metropolitan Board of Works at an early age and remained therein until its supersession by the London Co. Council, with which he continued, being its clerk, 1900-14. Besides those on folklore, G. pub. works on the hist. of London, of which *The Making of London*, 1912, is the best known. He also made valuable classified collections of the contents of the *Gentleman's Magazine*, 1731-1868.

Gomorrhah, see **SODOM** and **GOMORRAH**.
Gompers, Samuel (1850-1924), Amer. labour leader, b. Spitalfields, London, England; son of Solomon G., a poor Dutch Jew. In 1863 he emigrated to the U.S.A. and there worked at cigar-making. In 1864 he began developing the International Cigar-Makers' Union, of which he became secretary and afterwards president. Disapproval of the methods of the Knights of Labor led to his helping to found, in 1881, the Federation of Organized Trades and Labor Unions, of which he was president for 3 years. When this organisation was merged in the new Amer. Federation of Labour, Dec. 1886, G. was elected president of the new body, and, with the exception of the year 1895, he held its presidency for the remainder of his life. In the First World War he used all his influence to get the U.S.A. to side with the anti-Ger. powers of Europe. In 1919 he was elected president of the International Commission on Labor Legislation of the Paris Peace Conference. Later he was a member of the Advisory Committee to Amer. delegates to the Disarmament Conference, Washington. He wrote an autobiography, *Seventy Years of Life and Labour*, 1925.

Gomperz, Theodor (1832-1912), Austrian classical scholar, b. Brünn, son of Philip G., banker. Studied at Brünn, and from 1849 under Bonitz at Vienna, where he was qualified lecturer 1867, prof.-extraordinary from 1869, ordinary prof. of classical philology 1873-1901. During the last-named period he became widely known as a decipherer of inscriptions at Herculaneum. The best-known of his numerous works is *Beiträge zur Kritik und Erklärung griechische Denkmäler—Eine Geschichte der antiken Philosophie*, 1893-1902 (Eng. trans. by L. Magnus and G. G. Berry, 1901-12). G. also ed. a trans. of Milfr's collected works, Leipzig, 1889-90.

Gomulka, Wladislaw (1906-), Polish politician. He became an active trade unionist and Communist and was imprisoned sev. times before the Second World War. During the Ger. occupation of Poland, 1939-45, he helped to organise underground resistance. In June 1945 he became a deputy prime minister in the Polish Gov. and was vice-premier until 1949. Subsequently he was deprived of

his offices and disgraced for alleged deviationism and 'Titolism.' In 1956, however, following the Poznan riots in June/July, his prestige mounted rapidly; in Oct. he was elected first secretary of the Polish United Workers' party (Communist) and became the real ruler of Poland. He was subsequently able to achieve a settlement with Russia which, in fact, gave Poland a considerable amount of freedom from Russian interference in her internal affairs; and though the regime remained Communist many restrictions on personal and religious freedom were lifted. Elections held in 1957 confirmed G.'s popularity.

Gonçalves, Nuno (active 1450-67). Portuguese painter now recognised as a 15th-cent. master of importance, having an affinity of style with the early Flem. school. Few works by him survive, but his polyptych 'The Veneration of St Vincent' (Museu de Arte Antiga, Lisbon) is regarded as a masterpiece. It portrays members of court and society in the great epoch of conquest and maritime discovery. See J. De Figueiredo, *O Pintor Nuno Gonçalves*, 1910; R. Huyghe, *Nuno Gonçalves dans la peinture du XV^{ème} Siècle*, 1951.

Gonçalves Dias, António (1823-64), Brazilian poet, b. Caxias, Maranhão; educ. in Portugal. Returning to Brazil in 1845, he at once began on dramatic and journalistic work, and in 1846 issued a vol. of lyrics, *Primeiros Cantos*. This was followed by *Segundos Cantos e sextilhas de Frei Antão*, 1848, and *Ultimos Cantos*, 1851. His lyrics are marked by patriotism, love of nature, and beauty of expression.

Goncharov, Ivan Aleksandrovich (1814-1891), Russian novelist. He was a censor, 1856-73, and sometime editor of an official newspaper. In *Obломov*, 1859, a profound psychological and social study which made him famous, he depicted the character of an entirely lazy and idle gentleman; the title-hero became in Russia a symbol of likable laziness, thought to be a typical Russian characteristic. In *The Precipice*, 1869, G. confronts a conventional gentry family with a Nihilist. In *The Frigate 'Pallada'*, 1858, he described his voyage to Japan. See study by J. Lavrin, 1954.

Goncourt, Edmond Louis Antoine Huot de (1822-96), and his brother, **Jules Alfred Huot de** (1830-70), Fr. men of letters, estab. a unique and lasting literary partnership. They were both endowed with a hyper-sensitiveness to the minutest details of existence, and a feverish and wholly extravagant conception of the influence of those details and of what may be called the purely physical and material environment upon the trend and bias of a human life. Their theories as to novels and composition in general may be studied at length in the 9 vols. of their *Journal*, pub. 1887-96, but the practical working of these theories may be best appreciated in their novels, especially in their masterpiece, *Madame Gervaisais*, 1869. So personal and unsparing was the analysis

of emotion and incident in this work that it may be considered with truth to have been written with their life-blood. Other of their joint productions in the sphere of fiction were *Sœur Philomène*, 1861, *Renée Maupérin*, 1864, *Manette Salomon*, 1865; while the elder brother alone wrote *La Fille Elisa*, 1878, which attained a remarkable popularity, and *Chérie*, 1884. It is an apt similitude to speak of their novels as 'picture galleries hung with pictures of the momentary aspects of the world.' For they strove, not like Flaubert to present the grand unity which binds the most conflicting minutiae of daily life, but rather to depict the kaleidoscopic character which it possesses at the very moment of living, when the smallest things are magnified and there is none but the crudest perspective. Such an ambition entailed the most elaborate and lively knowledge of the period (the 18th cent.) about which they wrote, and this they procured by many years' untiring research into old letters, documents, and records, which but for their efforts would undoubtedly have remained in the oblivion into which they had already fallen. Their books, therefore, will be store-houses for the historians of the future, and the fineness of their miniature painting of the modes and manners of their chosen period, as it is displayed in *Portraits intimes du XVIII^e siècle*, 1856-8, and *L'Art du XVIII^e siècle*, 1859-75, etc., will long remain an object of wonder and admiration to their posterity as it was to their contemporaries. The brothers endowed a special Académie Goncourt that is to pub. their *Journal*; but 'so far very little has seen the light and it is to be feared, after two wars and much change, that the public may not be greatly impressed when the *Journal* does appear and reveals what many rather forgotten people did about 1870 or 1880' (Denis Saurat). The ann. prize of the Académie Goncourt, however, remains the greatest stimulus that can be given to the sale of a Fr. novel. See E. Zola, *Les Romanciers naturalistes*, 1881; P. Sabatier, *L'Esthétique des Goncourt*, 1920; M. Sauvage, *Jules et Edmond Goncourt*, 1932; F. Fosca, *Edmond et Jules Goncourt*, 1941.

Gondar, cap. of the prov. of Dembea in Amhara, Ethiopia, 68 m. NW. by N. of Debra Tabor, 25 m. N. of Lake Tana, and situated at an average altitude of 6500-7500 ft. in rugged country. Formerly cap. of Ethiopia in succession to Aksum. It was Basilides (who reigned from 1632 to 1635) who, after reasserting the royal power, built at G. a new cap., which was destined to remain the royal residence until the middle of last century. The town itself was built after the expulsion of the Jesuits. In the 16th cent. Father Paéz, a Portuguese missionary, laboured for 20 years building churches, palaces, and bridges, some of which may be seen near G. to this day. In 1714, following a revolt of the army, David, son of Jesus, a king of the old Ethiopian house of Solomon, was restored to the throne and entered G. in triumph. James Bruce of

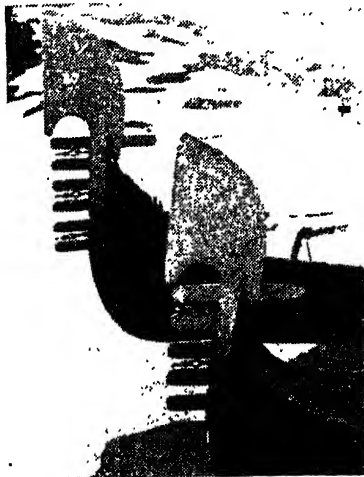
Kinnaird (q.v.) visited it in its period of decadence, leaving in 1772 at a time of continual bloodshed, when Michael Sobul returned to G. as ras. In 1848 Walter Chichele Plowden (subsequently murdered) visited G., where he concluded a trade treaty with Ali, ras of G. In 1854 King Theodore conquered G. and deposed the libertine John II, last of the titular emperors, and transferred his cap. from G. to Magdala. Near G. are the ruins of the fort of Gimp built by the Portuguese as a royal residence but burned by King Theodore. The architecture of G.'s churches and mosques occasionally reveals European medieval influences. There is an interesting museum. A modern hotel, built in 1956, has as its objective an increasing tourist trade. The pop. in the last century was 30,000 but has since then dwindled to 3000. See ETHIOPIA.

The Battle for Gondar, 1941.—With the capture of G. by Allied and Ethiopian patriot forces at the end of Nov. 1941 the last It. stronghold in East Africa fell. To all intents the fighting in It. East Africa had come to an end 6 months previously. See ITALIAN EAST AFRICA, CAMPAIGN IN (1940-41). But some 25,000 troops or more, It. and native, who had been garrisoning G., reinforced by fugitives from the beaten and scattered It. armies, continued their resistance within this stronghold, and, the weather being unsuitable for campaigning, they were sealed up by besieging Brit. forces and left to be dealt with when conditions were suitable. It was on 27 Nov. that Gen. Nasi surrendered the G. fortress to Gen. C. C. Fowkes, commanding Brit. and allied forces. The battle took place in high mountainous country very favourable to the defence and averaging 6000 ft above sea-level. The Brit. and East African troops fought magnificently. Attacking at dawn they turned the It. S. flank by midday and were pressing the attack round their rear. Highland, Indian, Sudanese, South African, and West African units, with small numbers of Free Fr., took part in preliminary operations, which involved an advance on G. from 6 converging points; but chief credit for the final battle must be accorded to Brit. East African and Ethiopian patriot troops. By the time the final assault was delivered the enemy's air force had been reduced to 1 fighter and 1 bomber. In all 11,500 It. troops surrendered, and 12,000 African loyals. The Brit. forces were less than half the strength of the It. and sustained only light casualties.

Gondokoro, vil. of the E. Sudan, on the E. bank of the Upper Nile. It is extremely unhealthy. It was named Ismailia by Sir Samuel Baker. It is practically at the end of the navigable course of the R. Nile, and owes to this fact much of its importance as a trading station.

Gondola, name given to the craft used since the 11th cent. for the conveyance of people along the canals of Venice. G.s are long, narrow, flat-bottomed boats, measuring 30 ft by 4 or 5 ft, whose prow

and stern rise high above the water and taper to a point. The gondolier stands on his *poppa* in the stern and skilfully propels the boat with graceful, broad sweeps of his single oar. Usually there is in the centre a *felze* or cabin, low and curtained. Once the G.s were gaily painted and decorated with oriental silks and rich embroideries, but since the sumptuary laws of the 16th cent. they have been quite black and altogether very different from the splendid craft of Carpaccio's pictures.



By courtesy of the Italian
State Tourist Office

PROWS OF GONDOLAS

Gondomar, Diego Sarmiento de Acuña, Count of (1567-1626), Sp. diplomat. From 1613 to 1618, and again from 1619 to 1622, he was Sp. ambas. in England, during which periods he boasted that he saved many Rom. Catholics from imprisonment and persecution, and was largely responsible for Raleigh's execution. He gained the friendship of James I and exerted all his influence to further the proposed marriage between Charles, Prince of Wales, and a Sp. princess.

Gonds, Dravidian and aboriginal tribe of India, who to-day do not exceed 1,500,000, though once (from the 16th cent. to the invasion of the Mahrattas in 1741) they ruled a large tract of the central provs., which was named after them Gondwana. They probably arrived in India with the other Dravidians from the NW., perhaps from the Iranian highlands, at some very remote period. They are non-Aryans, but the upper classes are no longer a pure race, having inter-

married freely with their Hindu neighbours. A Gond has a very dark skin, with black, curly hair; his skull is described as dolichocephalic, and his nose is flat and broad. Although many have adopted Hinduism the G. continue to propitiate evil spirits in riv., rock, and tree.

Gondwanaland, continent which the proponents of the theory of Continental Drift (q.v.) suggest may have existed in the S. hemisphere in earlier times and which it is supposed consisted of a land mass which has now fragmented to form Africa, Australia, South America, the Antarctic continent, Arabia, and peninsular India. The hypothesis accounts for certain remarkable similarities shown by the geological structure and past faunas of what are now widely separated land masses. Recent measurements of the magnetic properties of rocks from distant parts of G. do in fact show that there has been movement of these rocks relative to each other and to the magnetic pole of the earth since their formation, and thus provide new support for the theory. While of great importance if valid, the theory of the existence of G. remains unproved.

Gonfalon, or **Gonfanon** (derived from Old High Ger. *gunulfano*, war-flag), variously used in the Middle Ages for a banner or standard. Sometimes it was just a pennon fastened to the head of a knight's lance, but in religious processions and state functions it was a rectangular banner with numerous streamers. In Florence the 'gonfaloniere' were civic dignitaries.

Gongora, genus of Orchidaceae, evergreen epiphytes of tropical America, about 25 species; *G. armeniacae* and *G. odoratissima* are typical.

Góngora y Argote, Luis de (1561-1627), Sp. poet, b. Córdoba; studied law at Salamanca. His early works are marked by a truly poetic vein and a pleasing purity of style; they include ballads, odes, lyrics, and religious poems. Finding, however, that poetry afforded a poor livelihood, G. became a priest in 1604, and proceeded to develop and elaborate a most affected and somewhat euphuistic style of composition. Thus his *Polifemo*, 1612. *Salecidas*, 1613, and *Pyramo y Thisbe* are overlaid with stilted metaphors, grotesque Latinisms, and pompous phraseology, so much so that this new style was labelled Gongorism, or 'estilo culto.' G.'s influence on 17th-cent. Sp. poetry was immense. See M. Artigas, *Biografía y estudio crítico de don Luis de Góngora, y Argote*, 1925; D. Alonso, *La lengua poética de Góngora*, 2nd ed., 1950.

Goniometer (from Gk *gōnia*, angle, and *metron*, measure), instrument for measuring the angles between the faces of crystals. There are 2 kinds—the contact G. and the reflection G. The former is used at the present day for the approximate measurement of large crystals. The latter is an instrument of great precision, and is used for the accurate measurement of the angles between the faces of small

crystals. The faces must be smooth and bright so that they reflect sharply defined images of a bright object. By turning the crystal about an axis parallel to the edge between 2 faces, the image reflected from a second face may be brought into the same position as that formerly reflected from the first face. The angle through which the crystal has been rotated is the angle between the normals to the 2 faces.

Gonorrhoea, acute contagious disease characterised by inflammation of the mucous membrane of the urethra (the passage through which urine is passed) in the male and of the genital passage in the female. *G.* is one of the venereal diseases (q.v.), and the infection, as a rule, is transmitted in sexual intercourse. An infant, however, may become infected in its eyes from the genital passage of its mother if she is suffering from the disease. At one time this was a frequent cause of blindness in children. *G.* is caused by the gonococcus, *Neisseria gonorrhoea*. The first symptom, a burning sensation on passing urine, is noticed within 2 to 3 days of contracting the infection and there quickly follows a purulent, yellow discharge from the urethra or vagina. The lymphatic glands in the groin become enlarged and tender (see Bubo) and there is a feeling of malaise. The temp. may be slightly raised. The acute stage of the disease lasts for 2 to 3 weeks and, if left untreated, the discharge lessens and becomes watery rather than purulent, and finally ceases after 2 to 3 months. Alternatively the gonococci may travel upwards into the prostate (q.v.) and bladder in males, thence to the epididymis and testicles, and into the reproductive organs in females. The resulting inflammation may be a cause of sterility in both sexes. Gonococci may invade the blood stream and cause inflammation in the heart, synovial membranes or joints, causing an arthritis (q.v.). A rare form of *G.* arthritis affects the spinal joints causing the whole spine to become fixed and immobile. After the acute stage has subsided, gonococci may remain in the genito-urinary passages for a long time and, although giving rise to few symptoms, may be the source of an acute infection in a sexual partner. A late manifestation of *G.* in the male is a fibrous, annular contraction or stricture of a part of the urethra. This may contract to such an extent as to block the passage and cause retention of urine. At one time the treatment of *G.* consisted in irrigation with a solution of permanganate of potash. This did little more than cleanse the affected parts. The coming of the sulphonamides, however, changed the picture and the effectiveness of these drugs led to the belief that at last a cure for the disease had been found. Unfortunately it was very soon found that an increasing number of cases failed to respond owing to the development of gonococcal strains which were resistant to the sulphonamides. In 1943 penicillin stepped into the breach, and this anti-

biotic will cure 90 per cent of cases within a day or two if given early in the attack. So far no resistant strains of the micro-organism have developed. The effectiveness of penicillin as a treatment must not be taken to mean that *G.* is on the verge of being exterminated. There are still many patients who, because of the fear of social stigma, fail to seek treatment, and as human impulses do not change there will always be a reservoir of infection to perpetuate the disease. Because of its social implications, *G.* has been the subject of governmental legislation in all civilised countries. In the U.S.A. it is a notifiable disease but not so in Great Britain. In some countries houses of prostitution are licensed and subject to health inspection. In this country special powers have been given to local health authorities to deal with venereal diseases by the setting up of special clinics where free treatment is given under confidential conditions. A regulation of 1939 prescribed that any person named as a source of V.D. infection by 2 patients can be compelled to attend at a clinic for treatment. See L. and R. R. Willcox, *A Textbook of Venereal Diseases*, 1950.

Gonsalvo di Cordova, whose correct title was **Gonzalo Hernandez y Aguilar** (1453-1515), Sp. soldier, was awarded a large estate as the result of the favourable treaty he concluded with Abu Abdallah, better known as Boabdil, king of the Moors, after a prolonged contest with Granada, the Moorish stronghold. In 1498 he was honoured with the title of duke of St Angelo, because, with the co-operation of Ferdinand II of Naples, he had effectively driven the Fr. out of Italy. In 1500 'El Gran Capitán,' as he was called, rescued Cephalonia and Zante from the Turks and gave them back to Venice, and finally in 1503, after many vicissitudes and some reverses, gained a conspicuous victory over the Fr. near the Garigliano, securing Naples and Gaeta to the Spaniards. His enemies did not allow him long to enjoy his viceroyalty of Naples, for he was soon recalled home in disgrace.

Gonville, see CAJUS.

Gonzaga, name of a princely family in Italy, founded by Louis G. who was captain of Mantua, and who in 1328 murdered the tyrant of that city. His descendants ruled Mantua till 1708, when Ferdinand-Charles IV of G. was deprived of the duchy of Mantua because he had assisted Louis XIV in the War of the Sp. Succession. The last descendant in the direct line from Louis was Vincent II of G., who became a cardinal. John Francis of G. (1394-1444) was the 1st marquis of Mantua, and Frederick II of G. (1500-40) was the 1st duke. Frederick annexed Montferrat, which was elevated to a duchy in the reign of William of G. (1536-87). One branch line was estab. by a son of the Frederick II mentioned above. Its members were dukes of Mantua, Nevers, and Montferrat until all but Mantua was sold by Charles III of G. (1629-65) to Cardinal Mazarin. A second collateral

branch ruled Guastalla from 1541, when the Emperor Charles V gave it to Ferdinand of G. (1507-57), until 1746, when Elizabeth Farnese took possession of the duchy. The general policy of the G.s, many of whom were liberal patrons of art and learning, was to support and promote the imperial interests. See S. Brinton, *The Gonzagas, Lords of Mantua*, 1927.

Gonzaga, Luigi, see ALOYSIUS GONZAGA, St.

Gonzaga, Tomás António (1747-93), Portuguese poet, b. Oporto, but passed his boyhood at Baía, where his father was a magistrate. Educ. at home at the univ. of Coimbra, he returned to Brazil after some years' absence, and after holding public appointments at Villa Rica eventually (1786) succeeded his father as 'desembargador' of the appeal court in Baía. On the eve of his marriage to Dona Maria de Selxas Brandão, for whom he had conceived a romantic attachment, he was arrested for alleged complicity in a republican conspiracy, and was banished for 10 years to the coast of Mozambique, where an old romantic tradition pictured him undermined by physical and mental sickness. He is cherished as the Portuguese Petrarch, and his *Marília de Dirceu* is a vivid and beautiful love story. This book of lyrics, which has a pastoral setting modelled on Theocritus, is treasured by G.'s compatriots almost as highly as the poetry of Camões, although perhaps more than it intrinsically deserves. His other works include *Cartas chilenas*, pub. anonymously, and *Tratado de Direito Natural*. His *Collected Works* were pub. in 1942.

Googh, Sir Daniel (1816-89), mechanical engineer, b. Bedlington in Northumberland. At the age of 15 he began to work at the Tredegar ironworks, Monmouthshire. In 1837 he was appointed locomotive superintendent to the Great W. Railway. In 1864 he interested himself in the laying of a telegraph cable across the Atlantic, for which he was created a baronet.

Googh, George Peabody (1873-), Brit. historian, educ. at King's College, London, and Trinity College, Cambridge, of which he subsequently became an hon. fellow. After taking his degree he continued his studies in Berlin and Paris. His first book, *History of English Democratic Ideas in the Seventeenth Century*, 1898, was based on much original material and showed the scrupulous regard for sources which was to characterise his later historical work. From 1906 to 1910 he was Liberal M.P. for Bath. He became an authority in the diplomatic hist. and foreign policy of the modern period, and his extensive researches made his *History of Modern Europe, 1875-1919*, 1923, one of the best books on the period. He undertook the joint editorship with Sir Adolphus Ward of the *Cambridge History of British Foreign Policy, 1783-1919*, 1922-3. His reputation as a skilled and scholarly editor was further enhanced by his work in collaboration with H. W. V. Temperley on the

British Documents on the Origins of the War, 1898-1914, 1926-9. Writing for a more general public he has contributed 3 vols. to the Home Univ. Library, *Political Thought in England from Bacon to Halifax*, 1914, and *History of Our Time, 1885-1914*, 1946, and also a book on Germany, 1924, to the 'Modern World' series. He was president of the Historical Association, 1922-5, and of the National Peace Council, 1933-6. His position as a Ger. scholar is shown by his presidency of the Eng. Goethe Society. Other pub. include: *Germany and the French Revolution*, 1920, *Before the War, Studies in Diplomacy* (2 vols.), 1936, *Studies in Diplomacy and Statecraft*, 1942, *Courts and Cabinets*, 1944, *The German Mind and Outlook*, 1945, *Frederick the Great*, 1947, and *Studies in German History, 1949*, *Louis XV*, 1956.

Good, John Mason (1764-1827), physician and author, b. Epping, Essex. From 1784 he practised at Sudbury as a surgeon but moved to London in 1793, with the view of obtaining literary employment. He pub. various poems, translations, and professional treatises. Among the translations are *The Song of Songs*, from the Hebrew, 1803, *The Nature of Things*, from Lucretius, 1805, and *The Book of Job*, 1812. See O. Gregory, *Memoirs of the Life, Writings, and Character of the late J. M. Good*, 1828.

Good Conduct Pay, formerly additional pay granted to privates, second corporals, and bombardiers in the Brit. Army for good conduct, as proved by the absence of entries in the regimental defaulters' book. It was abolished at the end of the First World War, but subsequently awarded to non-European N.C.O.s and privates at certain stations abroad.

Good Friday, the Friday before Easter, observed by Christians with special rites as the anniversary of the Crucifixion. The name most probably comes from 'God's Friday.' See CRUCIFIXION; HOLY WEEK.

'Good Hope', Brit. cruiser of 14,000 tons, which was launched in 1901 at Fairfield, on the Clyde. In 1914 G. H. was Adm. Cradock's flagship. She was sunk with all hands by Adm. von Spee's squadron at the battle of Coronel (1 Nov. 1914).

Good Hope, Cape of, see CAPE (CAPE OF GOOD HOPE) PROVINCE.

Goodfellow, Robin, see PUCK.

Goodrich, Samuel Griswold (1793-1860), Amer. author, whose pen-name was Peter Parley. From 1828 to 1842 he ed. an ann. called *The Token*, to which he contributed tales, poems, and essays. Most of his pub., of which there are over 200, were written for the young, and deal with hist., geography, travels, and natural hist. Many of his books became popular in Britain. See his *Recollections of a Lifetime*, 1857.

Goodrich, vil. of Herefordshire, England, on the R. Wye, 4 m. SW. of Ross. The castle, now a ruin, dates from the mid-12th cent., when a keep was erected to guard the ford, but was not completed until about a century and a half later. It became the castle of the lords of the S.

Marches, but, as a Royalist stronghold, was reduced by the Commonwealth during the Civil war. Pop. 450.

Goodsir, John (1814-67), anatomist, *b.* Anstruther, Fife; he studied at St Andrews Univ., from where he served an apprenticeship to a dentist. In 1839 he pub. an essay on the teeth, and the next year he became conservator of the museum of the Royal College of Surgeons of Edinburgh. His important memoirs on secreting structures and on the human placentas are still of value. He gained a wide reputation as an anatomical teacher in the univ. of Edinburgh. See W. Turner, *Memoirs*, 1868.

Goodwill, advantage or benefit acquired by an estab. or business beyond the mere value of the capital, stock-in-trade, and funds employed in it, which it receives from constant or habitual customers, whether by reason of the quality of the goods sold, the local position of the estab., the skill, reputation, or personality of the proprietor, or any other reason that popular favour may assign. It is the expectancy of the continuance of such advantage or benefit that constitutes the market value of G. In the absence of express stipulation the transfer of G. leaves the vendor free to compete with the purchaser of his business, provided he does not hold himself out to be still carrying on the old business. It is a settled principle of law that upon the sale of G. the vendor must not solicit the old customers to cease dealing with the purchaser, but he may deal with such persons if they choose to come to him unsolicited, and the vendor may publicly advertise his business. Where a partnership is being dissolved, any partner may require that the G. may be sold together with the other partnership assets, and he may restrain the other partner or partners from doing anything in the meantime to prejudice the value of the G., as for example by using the partnership name. G. may be mortgaged, assigned, or taken in execution (q.v.), except where merely personal, as where it is constituted by the ability and skill of the proprietor.

Goodwin, John (c. 1594-1665), clergyman, *b.* in Norfolk. He was educ. at Queen's College, Cambridge. From 1633 to 1645 he was vicar of St Stephen's, Coleman Street, but was rejected from this living for attacking Presbyterianism, and set up an independent congregation. In 1649 he issued a pamphlet *Right and Wrong Met*, in which he upheld Cromwell's army against the Parliament. He also wrote *Anti-Cavalierism*, 1642, *Redemption Redeemed*, 1651, and the *Triumvir*, 1658. See life by T. Jackson, 1822.

Goodwin, Thomas (1600-80), divine of the later Puritan period, *b.* Rollesby; studied at Cambridge, becoming a fellow of Catharine Hall, 1620. In 1625 he was licensed a preacher of the univ., and 3 years later became lecturer of Trinity Church, Cambridge, and was presented the vicarage by the king in 1632. Harassed by the interference of his

bishop, he resigned his living and retired to Holland, where he was a pastor to the Eng. church at Arnheim. In 1640 he returned to London and ministered to a small congregation in St Dunstan's-in-the-E., where he rose to considerable eminence as a preacher. In 1643 he was elected a member of the Westminster Assembly, and frequently preached before the House of Commons by appointment. He rose high into favour with the protector. Five vols. of his works were pub. at London (1682-1704).

Goodwin Sands, range of exceedingly dangerous sandbanks some 10 m. long in the strait of Dover (see DOVER, STRAIT OF), extending off the SE. coast of Kent, England, about 7 m. E. of Deal. Large level patches of sand are left dry when the tide recedes and afford a firm foothold: when covered the sands are shifting and may be moved by the prevailing tide. The roadstead, termed the Downs (q.v.), lies between them and the mainland. The shoal is divided into 2 prin. parts, the N. and S. Goodwins, between which is the deep inlet of Trinity Bay. A great number of wrecks have taken place on the G. S.

There are 3 lightships off the Goodwins, the *N. G.*, the *E. G.* (with a powerful 24-hr radio beacon), and the *S. G.*, and numerous lighted and unlighted buoys. In 1954 the *S. G.* lightship broke adrift in heavy seas and was lost with all hands, a single passenger being the only survivor.

Goodwood, seat of the duke of Richmond and Gordon in Sussex. Its park is famous for cedars and other trees, which in 1754 included 30 different kinds of oaks and 400 different Amer. trees and shrubs. Racing was estab. in 1802, but its importance (since 1825) was due to Lord George Bentinck's exertions. The races are held annually in the park during the last week of July. There is motor racing on the former emergency landing aerodrome.

Goodyear, Charles (1800-60), Amer. inventor, *b.* New Haven, Connecticut. As an iron manufacturer he failed in 1830, and he next turned to indiarubber. After suffering great poverty and ridicule he patented, in 1844, a process of vulcanising rubber. This process he later perfected until he required 60 patents to secure his inventions. He received medals in London, 1851, and Paris, 1855, as well as the cross of the Legion of Honour. See Pierce, *Trials of an Inventor*, 1866; and J. Parton, *Famous Americans of Recent Times* (Boston), 1867.

Goodyer, John (1597-1650), botanist, *b.* Mapledurham; he helped in the editing of a later ed. of Gerard's *Herbal*.

Googe, Barnabe (1540-94), poet, *b.* Alvingham, Lincs. He studied both at Christ's College, Cambridge, and at New College, Oxford, then travelled on the Continent, joining on his return his relative, Sir Wm Cecil, and becoming one of the gentlemen pensioners of Queen Elizabeth. He was a friend of George Turberville and imitated his style and the metres of his poems. His best-known

works are a series of 8 eclogues and his *Cupido Conquered*. A collection of his works was pub. in 1871 by Edward Arber.

Goole, municipal bor., mkt tn, and port in the W. Riding of Yorks, England, on the R. Ouse. G. is the 10th port in the U.K., and the most inland port on the E. coast. Traffic tonnage in 1953, when the port handled 3536 sea-going vessels, was 3,152,013, of which coal shipments accounted for 2,617,329 tons. Prin. imports are provisions, farina and glucose, strawboards, wool, and scrap. Regular liner services operate between G. and various continental ports. Shipbuilding is also carried out, and a modern light-industrial estate is being developed. G. is also the mkt tn for a wide agric. area. Pop. 19,360.

Goose, name given to all the birds belonging to the genus *Anser*, of the Anatidae, or duck family; there are about 12 species, which occur in the Nearctic and Palearctic regions. They are characterised by a slightly hooked beak, high at the base, short webbed feet, and legs placed further forward than in the case of other Anatidae. Geese live entirely on grass and other herbage, and are more at home on land than on water, as they swim very little and never dive. *A. anser*, the graylag G., is the only species which nests in Great Britain, and is the parent of the domesticated breed; it is found in the W. of Scotland and in the central cos. of Ireland. *A. abifrons*, the laughing G., *A. fabalis*, the bean G., and *A. brachyrhynchus*, the pink-footed G., are among the species which travel to Great Britain. Geese were domesticated at an early period, and are kept for their quills and feathers as well as for their flesh. Large numbers are bred in Lincs, and more are imported from Holland and Germany. Strasburg geese having the widest reputation. Embden geese, remarkable for their whiteness, and Toulouse geese, are 2 of the best-known domesticated varieties. See also POULTRY.

Goose, Barnacle, see BARNACLE GOOSE.

Goose, Solan, see GANNET.

Goose Bay, airport and base at the head of Hamilton Inlet, Labrador. Its construction was undertaken by the Canadian Dept of Transport at a cost of \$15,000,000. Work on it was begun during the winter of 1941, and the base was in operation late in 1942. By the spring of 1943 it was servicing 100 planes every 24 hrs for flights to Europe, being the prin. base of the Ferry Command. The building of the airport was a remarkable engineering feat; great runways and aerodromes were estab., power stations, engineering shops, barracks, and entertainment and hospital buildings were erected, and roads laid out through the country over which formerly travelling was impossible in winter except on snowshoes and skis. G. B. in fact soon became a self-contained tn with its own waterworks, church, cinema, and defence system. It was a bastion against air attack from Ger. planes via Iceland, Greenland, and Labrador, and the execu-

tion of the project was expedited as a countermove to the Ger. plot, which had been worked out in detail in the school of geopolitical science in Berlin, to carry out the invasion of Canada from Norway. G. B. was leased to Canada by the Newfoundland Gov. for 99 years, the lease to expire on the termination of hostilities. See W. G. Carr, *Checkmate in the North*, 1945. Pop. c. 2800.

Goose-fish, popular name for *Lophius piscatorius*, the angler fish.

Goose Grass, see CLEAVERS.

Gooseberry, or *Ribes grossularia*, species of Grossulariaceae, closely allied to the red, black, and flowering currants. It is indigenous to Britain and other European regions of cool temp., as well as to N. America and W. Asia. The name G. is supposed to have arisen from the fruit having been made into a sauce and used for young geese. The shrubby plant is very largely cultivated in Britain for its acid fruits, and it is usually propagated by means of cuttings. It is very hardy, and with good pruning and exposure to the light it will grow in almost any garden; the flavour is best, however, where the low temp. of the N. brings the fruit more slowly to maturity than is the case in the S. The Cape G. is *Physalis peruviana*, a species of Solanaceae, and it bears also the popular names of strawberry tomato and G. tomato.

Goossens, Sir Eugene (1893-), conductor and composer, b. London, son of Eugene G., a Belgian b. in France and long settled in England. He won a scholarship at the Liverpool College of Music in 1906 and studied under Sir Charles Stanford at the Royal College of Music, London. He played in Sir Henry Wood's orchestra and in the Philharmonic string quartet; and between 1915 and 1920 associated with Sir Thomas Beecham. His first notable appearance as a conductor was in 1916, when he directed Stanford's *The Critic*. In 1921 he formed his own orchestra, and as a conductor was afterwards associated with many famous orchestras in England and America. He was conductor of the Cincinnati Symphony Orchestra, 1931-46, and in 1947 was appointed director of the New South Wales Conservatory at Sydney and conductor of the symphony orchestra. As a composer he has been prolific in most depts of music. His works include 2 operas to librettos by Arnold Bennett, *Judith*, 1929, and *Don Juan de Mañara*, 1937, and much chamber music.

'Gopher State', see MINNESOTA.

Gopher Tortoise (*Testudo polyphemus*), land tortoise occurring in the S. states of America. It does great damage to potato crops, upon which it feeds; its flesh is considered excellent eating. G. is more commonly applied to certain small rodent mammals.

Göppingen, Ger. tn in the Land of Baden-Württemberg (q.v.), on the Fils, 22 m. E. by S. of Stuttgart (q.v.). It has a 15th-cent. church, and a 16th-cent. castle, built partly with stones from the ruined Hohenstaufen (q.v.) fortress above

the tn. There are mineral springs, and metal, textile, and tanning industries. Pop. 44,000.

Gorbals, suburb of Glasgow (q.v.) lying S. of the Clyde. Until 1846 it was a separate municipality; now a burgh par. constituency. It is a poor and crowded part of the city.

Gorshakov: 1. Prince Mikhail Dmitriyevich (1792-1861), Russian general. In the Crimean war he commanded the Russian forces in the Crimea and skillfully conducted the defence of Sevastopol. Later he was viceroy in Warsaw, where he distinguished himself by his sympathetic policy towards the Poles.

2. Prince Aleksandr Mikhaylovich (1798-1833), Russian statesman; foreign minister, 1856-62. He rejected the attempts by foreign powers to interfere in favour of the Poles during the Polish uprising of 1863; in the same year in a circular to European powers he justified the Russian advance in Central Asia by the need to protect each new frontier from raids by tribesmen, quoting the experience of Britain and the U.S.A. He headed the Russian delegation at the Berlin Congress (q.v.) and signed the Berlin Treaty in 1878.

Gordian Knot, see **GORDIUM**.

Gordianus, Marcus Antonius Africanus (AD 168-238), Rom. emperor. He was the son of Metius Marcellus, through whom he traced his descent from Trajan. He governed Africa for many years as proconsul, and at the age of 80 was proclaimed emperor by the troops who had rebelled against the tyrannical rule of Maximinus. His son was killed in battle, and G., overwhelmed with grief, committed suicide at Carthage after a reign of 2 months.

Gordianus, Marcus Antonius Pius (AD 224-44), Rom. emperor, grandson of the above. He was proclaimed emperor by the troops after the murder of Balbinus and Pupienus (238). He defeated the Goths in Moesia and waged war against Sapor, king of Persia, from whom he captured many cities. G. was assassinated by his troops at Zaitba, in Mesopotamia, with the connivance of the praetorian prefect, Philip the Arab, who succeeded him.

Gordium, anct city of Phrygia near the Sangarius on the Persian 'royal road' from Pessinus to Ancyra. It was here that, according to legend, Alexander the Great cut with his sword the G. knot which bound the yoke to the pole of the wagon of Gordius, the peasant king of Phrygia. This act was supposed to fulfil a prophecy which declared that whosoever should undo the knot would be king of all Asia.

Gordon, name of a famous Scottish family called after the lands of G. or Gordon in Berwickshire, and tracing its lineage to the 13th cent. Sir Adam G. (d. 1333), in whom were united the G. and Huntly branches of the original family, took a prominent part in the struggle for independence. Sir Adam at first sided with the Eng., but after the battle of Bannockburn he joined the party of

Bruce and was rewarded with the lordship of Strathbogie in Aberdeenshire, which became the chief seat of the family. Sir Adam had 2 sons, Adam and Wm. From the younger son, Wm., sprang the Gallo-way, Irish, and Virginian branches of the stock. The elder, Adam G., was killed at Homildon Hill in 1403, and so brought the direct legitimate male line to a close. Sir Adam's daughter, Elizabeth, married Sir Alexander Seton and inherited the barony of the G. and Huntly lands in Berwickshire and the barony of the G. lands in Aberdeenshire. From this marriage sprang the Seton-G.s or the dukes of G. Their son Alexander was made earl of Huntly in 1445 and subsequently lord of Badenoch. He was succeeded by his second son, George, who married the



GEORGE GORDON, SECOND MARQUESS OF HUNTLY

daughter of King James I. The third successor to the title was his son, Alexander, who augmented his ter. by the lands of Strathaven and the brae of Lochaber. He fought with distinction at Flodden. The fourth earl was his grandson, George, who inherited the earldom of Moray. He thus became the wealthiest and most powerful of Scottish landowners—so powerful that the king deprived him of the earldom of Moray. The earl at once rebelled, but was defeated and slain at Corrichie in 1562. His son George succeeded as 5th earl, and was in turn succeeded by his son George as 6th earl, a champion of Catholicism. He defeated the king's forces at Glenlivet, but was pardoned and created marquess of Huntly in 1599. His son George, the 2nd marquess, was a fervent royalist and was executed at Edinburgh in 1649. George, 4th marquess of Huntly, was created duke of G. in 1684. A Catholic, he was appointed by James II keeper of Edinburgh Castle. He submitted to George I, but was suspected of Jacobite sympathies and was forced to reside on parole in Edinburgh. He was succeeded by his son Alexander, the 2nd duke, who associated himself with the Old Pretender but was pardoned on his surrender

of G. Castle in 1716. Cosmo George, the 3rd duke, left 3 sons. Alexander, the eldest and the 4th duke, is remembered as being the author of the popular song *Cauld Kail in Aberdeen*; the younger, Lord George (q.v.), was leader of the 'No Popery' riots of 1780 and d. in Newgate in 1793. The 5th duke raised the famous corps now called the second battalion of the G. Highlanders. He d. without issue in 1836, and the title with the earldom of Norwich and the barony of G. Huntly became extinct. The title of marquess of Huntly passed to his cousin and heir-male, George, 5th earl of Aboyne. Lady Charlotte G., daughter of the 4th duke and wife of Charles Lennox, 4th duke of Richmond, had a son Charles, who became heir to the estates and called himself G.-Lennox. The dukedom of G. was revived in 1876 in favour of the 6th duke of Richmond, who became duke of Richmond and G. George, the 6th earl of G., and 1st marquess of Huntly, left a second son, George, who became viscount of Melgund and Lord Aboyne (1627). On his death the title of viscount of Aboyne passed to his elder brother George and subsequently to his son, Lord James, a fervent royalist. The title then passed in 1666 to his younger brother, Lord Charles G. George, 5th earl of Aboyne, was also 9th marquess of Huntly. His eldest son, Charles, was 10th marquess and he in turn left a son, Charles, the 11th marquess. The earls of Sutherland are also a branch of this family. Adam G. of Aboyne (d. 1537) acquired the title of earl of Sutherland by his marriage with Elizabeth, countess of Sutherland. From this marriage sprang the G. earls of Sutherland, who retained the surname G. till the 18th cent., when they revived the original surname of Sutherland. Of the branch of the G. earls of Aberdeen, Sir John G. of Haddo was made a baronet of Nova Scotia, and after him is named Haddo's Hole, of St Giles's Church, Edinburgh, where he was imprisoned. His son, Sir George G. of Haddo, was raised to the peerage in 1682 with the titles of earl of Aberdeen, viscount of Formantine, Lord Haddo, Methlic, Tarves, and Kellie. See J. M. Bulloch, *The House of Gordon*, 1903-7.

Gordon, Adam Lindsay (1833-70), Australian poet, b. Fayal in the Azores, of Scottish parents. Educ. at the Military Academy at Woolwich, he went to Australia with a commission in the Mounted Police in 1853, but soon left that to become an independent horse-breaker. Horses were a lifelong passion with him, as is shown by 2 of his best-known poems, 'How We Beat the Favourite' and 'The Sick Stock-Rider.' In 1865 he became a member of the South Australian House of Assembly, but irresponsibility prevented his success in politics. In 1868 he scored his greatest triumph by winning the Melbourne Hunt Cup, but 2 years later, oppressed by poverty and gloom, he shot himself at the age of 37. His vols. of poems, *Sea-Spray and Smoke Drift*, 1867, and *Bush Ballads and Galloping Rhymes*,

1870, reflect the vigour and virility of the country of his adoption, so that he has been accepted, though an immigrant, as one of Australia's greatest poets. See the *A. L. Gordon Memorial Volume*, Melbourne, 1926, and study by D. Sladen, 1934.

Gordon, Alexander (1692?-c. 1754), Scottish antiquary, b. probably in Aberdeen, where he became M.A., taught languages and music, and painted portraits. Acquired knowledge abroad—Fr., Italian, art, antiquities. After 1720 toured Scotland and N. of England, examining Rom. remains; results pub. in 1726 as *Itinerarium Septentrionale*. In London issued lives of popes and Fr. kings; made trans. and additions to the *Itinerarium*, 1731-2. In 1735 secretary to Society for Encouragement of Learning and to Society of Antiquaries. Became also secretary to Egyptian Society.

Gordon, Arthur Hamilton, see STANMORE, 1st BARON.

Gordon, Charles George (1833-85), known as Chinese G., the hero of Khartoum, b. Woolwich, Kent. He was present at the assault of the Redan (1855) in Crimea. In 1860 he joined the expedition in China where the Taiping rebellion was rife. The Russians were pushing their frontiers on the Amur and Ussuri; the Muslims in Yunnan and the Turkestan regions were insurgent. The Chinese Empire was on the point of destruction, but G. put himself at the head of a Chinese army with a staff of Eng. and Amer. officers. The career of the band was so glorious that it came to be known as the 'ever-victorious army.' G. recovered Nanking from the rebels and quelled the Taiping forces. In 1872 G. was appointed commissioner for superintending the Danube navigation, and in 1873 he was appointed governor of the Sudan, but resigned in 1880. In 1884 he was again sent to the Sudan where a revolt had broken out under Mahammed Ahmed, who proclaimed himself as the Mahdi. The Brit. Gov. had ordered Egypt to abandon the Sudan, a most hazardous policy to carry out, and G. was deputed to go there and evacuate the Egyptian pop. The situation was beset with difficulties and peril. G. was surrounded and besieged in Khartoum. The siege had been protracted for 5 months when a relief party was sent from England. In Sept. the relief forces commenced their ascent of the Nile; by Nov. the expedition reached the Second Cataract and the borders of the Sudan. The navigation of the riv. was fraught with difficulties and dangers. It was the end of Jan. before the party, crossing the desert from Korti, made their way to Khartoum. On 28 Jan. the advance reached Khartoum, but found that the place had been captured by the rebels 2 days before and G. had been put to death. The way in which G. sustained his position at Khartoum is one of the marvels of hist. He was of different nationality and religion from the people of the garrison, but in them he inspired absolute faith and

fidelity. On his staff he had only one Brit. officer. The fortifications of the town were inadequate, the provisions were scanty, but in the face of all odds he persevered. His jour., dating from 10 to 14 Dec., was preserved, and, although criticisms of the rightness of some of G.'s decisions and methods have subsequently been raised, this is still one of the inspiring documents of hist. See B. M. Allen, *Gordon and the Sudan*, 1931; P. Crabitès, *Gordon, the Sudan, and Slavery*, 1933; L. & E. Hanson, *Gordon*, 1953; C. Beatty, *His Country was the World*, 1954; Lord Elton, *Gordon*, 1955. The picture of Gordon in Lytton Strachey's *Eminent Victorians*, 1918, is entertaining but unreliable.

Gordon, Charles W., see CONNOR, R.
Gordon, Duke of Richmond and, see GORDON; RICHMOND AND GORDON.

Gordon, George, see BYRON, BARON.

Gordon, Lord George (1751-93), leader of the 'Gordon' or 'No Popery' riots, a son of the 3rd duke of G. After some years in the navy he entered Parliament in 1774 and made himself conspicuous by his indiscriminate attacks on both Whigs and Tories. The 'Gordon' riots were provoked by the cancelling of some of the restrictions on Rom. Catholics. In 1780 G. convoked his followers at St George's Fields, London, in order to petition a repeal of the new enactments at the House of Commons. The guards were called out, but the rioters held London for a fortnight, doing great damage to property. G. was committed to the Tower on a charge of treason, but was acquitted. He d. insane in Newgate jail, where he had been imprisoned in 1787 for libelling the Brit. judiciary. See P. Colson, *Private Portraits*, 1948.

Gordon, George Hamilton, and Sir John Campbell, see ABERDEEN, 4th and 7th EARLS OF.

Gordon, John Brown (1832-1904), Amer. Confederate general and statesman, b. in Upton co., Georgia; graduated at the State Univ., 1852, and practised law. In 1861 entered the Confederate army as captain of infantry; rose to be lieutenant-general. Was wounded 8 times during the Civil war, and commanded a wing of Lee's army at Appomattox Court House. Wrote *Reminiscences of the Civil War*, 1905. See A. F. Tankersley, *John B. Gordon*, 1955.

Gordon, Sir John Watson, see WATSON-GORDON, SIR JOHN.

Gordon Highlanders, The, or the Gay Gordons as they are known historically, are one of the most famous regiments in the Brit. Army. The regiment was raised in 1794 by the marquess of Huntly, afterwards 5th and last duke of Gordon, who at that time was a captain in the 3rd Foot Guards, now the Scots Guards. The regimental tartan was the Gordon, with a distinguishing yellow stripe. The regiment was numbered 92nd, but in 1881 it was linked with the 75th to form the G. H. The 75th was raised in 1787 by Gen. Sir Robert Abercromby for service in India. Gen. Robert Crauford of Peninsula fame was a captain in the 75th. The regiment

served with distinction in India, then in the Kafir war in South Africa, the Indian mutiny, the Egyptian campaign (1882), and the Nile expedition. The 92nd first saw service in N. Holland at Egmont-op-Zee in 1799, then in Egypt (1801) and the Peninsula. It formed part of the Scots Brigade at Waterloo and took part in Lord Roberts's famous march from Kabul to Kandahar in 1880, and it was also in the expedition to Chitral. Piper Findlater of the G. H. won the V.C. at Tirah, 1897, by playing the pipes as the Gordons stormed an Afridi stronghold, though he was wounded in both legs. During the Boer war the regiment formed part of Gen. Sir George White's force defending Ladysmith. During the First World War it raised 21 battalions which served in France, Flanders, and Italy. Mons, Le Cateau, and other well-known battles are included in its long roll of battle honours. In the Second World War the G. H. were part of the 51st (Highland) Div. of Montgomery's Eighth Army in North Africa and rode into Tripoli on the top of their infantry tanks (Jan. 1943). They were conspicuous for their stubborn defence, in Feb. 1944, in the battle for the bridgehead of Anzio, Italy. In Feb. 1945, in NW. Europe, they were part of Gen. Crerar's Canadian army and were involved in bitter fighting after crossing the Niers R., notably at Gennep and around Kessel.

Gordon-Lennox, Charles Henry, see RICHMOND AND GORDON, 6th DUKE OF.

Gordon Riots, see GORDON, LORD GEORGE.

Gordon Setter, see SETTER.

Gordonstoun, public school for boys with preparatory dept in Moray, Scotland, founded in 1934 by Eng. friends of Salem (q.v.). The Nautical Dept gives boys specialist training for the R.N. and the Merchant Service within the framework of a normal public school education. Other unusual activities include mt rescue and fire fighting. The Duke of Edinburgh (b. 1921) was educ. there.

Gore, Catherine Grace Frances (1799-1861), novelist, b. E. Retford, Notts, daughter of Charles Moody, a wine merchant. In 1823 she married Capt. Charles A. G., and in the following year appeared her first novel, *Theresa Marchmont*. Between then and 1862 she pub. about 70 works, the most successful being novels of fashionable Eng. life. Among these may be mentioned *Manners of the Day*, 1830, *Cecil*, or *the Adventures of a Coxcomb*, 1841, and *The Banker's Wife*, 1843. She was also known as a song writer. Shortly before her death she became blind.

Gore, Charles (1853-1932), Eng. bishop, son of Hon. Charles Alexander G. Educ. at Harrow and Balliol College, Oxford. In 1880 became vice-principal of Cuddesdon College, and in 1884 librarian of Pusey House, Oxford. Ed. *Lux Mundi*, essays by contemporary theologians and others, in 1890. Vicar of Radley, 1895, and later canon of Westminster. Chaplain to Queen Alexandra, 1900, and to

Edward VII in 1901. In 1902 he became bishop of Worcester and in 1905 bishop of Birmingham. In 1911 he was appointed bishop of Oxford. In 1919 he resigned. He engaged in much humanitarian work, and was one of the high churchmen known popularly as Christian Socialists. He founded the fraternity called the Community of the Resurrection, with rules of special devotion and 'a common purse.' His chief works are *The Church and the Ministry*, 1889, *Roman Catholic Claims*, 1889, *Bampton Lectures*, 1891, *The Creed of the Christian*, 1895, *The Body of Christ*, 1901, *Spiritual Efficiency*, 1904, *The New Theology and the Old Religion*, 1908, *Orders and Unity*, 1910, *The Religion of the Church*, 1916, *Christian Moral Principles*, 1921, *Belief in God*, 1921, *Belief*



BISHOP GORE

in Christ, 1922, *The Holy Spirit and the Church*, 1924, *Christ and Society*, 1928, *Jesus of Nazareth*, 1929, and *The Philosophy of the Good Life*, 1930. He also ed. *Thoughts on Religion*, 1895, by G. J. Romanes, a converted agnostic man of science. See A. Mansbridge, *Edward Stuart Talbot and Charles Gore: Witnesses to and Interpreters of the Christian Faith in Church and State*, 1935.

Gore, bor. of South Is., New Zealand, in the Southland dist., 60 m. NE. of Invercargill, on the Mataura R.; centre of a fine farming area. Pop. 6554.

Gore-Booth, Eva Selena (1870-1926), b. Lissadell, co. Sligo, daughter of Sir Henry G.-B., Bart. For a time she lived in Manchester, taking an active part in the women's suffrage movement. Her poetry shows the influence of both Irish legend and Irish scenery, the latter inspiring her best-known piece, 'The Little Waves of Breeffny,' and she has also a strong vein of mysticism. Vols. of her verse include *Unseen Kings*, 1904, *The Three Resurrections*, 1905, *The Agate Lamp*, 1912, *The Perilous Light*, 1915, *The Death of Finovar*, 1916, *Broken Glory*, 1918, and *The Shepherd of Eternity*, 1925.

Goree, barren rocky is. 3 m. off the coast of Senegal, Fr. West Africa, now forming part of the *circumscription* of Dakar. It lies at the opening of the fine harbour flanked by Cape Verde peninsula. Area 675 ac., mainly covered by the tn of G. It is no longer of importance. G. was occupied by the Dutch in the 17th cent.; captured by the Brit. during the Seven Years War, it thereafter changed hands 4 times. It fell to de Ruyter, then to the Fr.; re-taken by the Brit. during the Napoleonic Wars, it reverted to France in 1817.

Gorell, Ronald Gorell Barnes, 3rd Baron (1885-), poet and novelist, was educ. at Winchester, Harrow, and Oxford. In 1909 he was called to the Bar, but turned to writing and from 1910 to 1915 worked for *The Times*. During the First World War he was awarded the M.C., and in 1919 he was made a C.B.E. From 1933 to 1939 he ed. the *Cornhill Magazine*. His books include *Babes in the African Wood*, 1911, *Days of Destiny*, 1917, *Pilgrimage*, 1920, *Many Mansions*, 1926, *Unheard Melodies*, 1934, *Last of the English*, 1939, *Luck*, 1948, and *He Walked in Light*, 1954.

Gorey, seaside resort of co. Wexford, Rep. of Ireland, 18 m. NE. of Ennis-corthy. It has a college for rural science. Pop. 3000.

Gorgan, dist. and tn of Persia, situated SE. of the Caspian Sea, formerly called Astarabad. Pop. of tn 28,500.

Gorgas, William Crawford (1854-1920), Amer. Army surgeon, b. Toulminville, Alabama. He studied medicine in New York, and after qualifying in 1880 entered the army medical service. In 1898 he was sent to Havana to eradicate a yellow fever epidemic. By a vigorous campaign of mosquito extermination he made the city free of the disease for the first time for 150 years. In 1904 he performed a similar service in the Panama Canal zone, making possible completion of the canal. He then became director of the International Health Board at the Rockefeller Institute. G. became a great authority on sanitation; he was appointed surgeon-general of the U.S. Army in 1914. While on a visit to London in 1920 he was invested a hon. K.C.M.G.; during the same visit he d. in London. His funeral service was held at St Paul's Cathedral. See J. M. Gibson, *Physician to the World*, 1950; life by M. D. Gorgas and R. J. Hondrick, 1924.

Gorge, see BASTION.

Görgei, Arthur (1818-1916), Hungarian commander and writer, b. Taporez, Hungary. He fought in the Hungarian interest in the war against Austria and rose to be commander-in-chief in 1849. But his glory as a commander was eclipsed by his surrender to the Russians at Vilagos. His conduct on this occasion was judged with great harshness by Kossuth, and being accused of treason he was imprisoned at Klagenfurt. In 1867 he was pardoned. He pub. *Mein Leben und Werken*, 1848 und 1849, 1851, of which there is an Eng. trans.

Gorges, Sir Fernando (c. 1566–1647), founder of Maine, b. Somerset. He was both sailor and soldier at an early date. Before he was 21 he was a prisoner of the Spaniards, and in the year 1589 he fought for Henry IV. of France. He became governor of Plymouth, and was a special friend of Essex, whom he supported in his attempt to rebel. He was continued in his office as governor of Plymouth by James I, but he and his garrison were so badly neglected by the king that he finally resigned. He then turned his attention to the colonies and interested himself in many plantations. In 1639 he received a royal charter for Maine. See H. S. Burrage, *Gorges, and the Grant of the Province of Maine*, 1923.

Gorgias of Leontini (c. 485—c. 380 BC), Gk rhetorician and sophist. In 427 BC he was sent to Athens to seek aid against Syracuse. The remainder of his life was spent in Athens as a teacher of rhetoric, and at Larissa. His style was highly ornate, rich, and elaborate, and considerably influenced the oratory of Demosthenes, though its effect on rhetoricians of inferior calibre was vicious. Of his works there survive only 2 encomia, on *Helen* and *Palamedes*, ed. F. Blass, 1881, together with some fragments printed by H. Diels in *Fragmente der Vorsokratiker II*, 6th ed. 1952.

Gorgons, Gorgones, mythical monsters of whom Hesiod mentions 3—Stheno, Euryale, and Medusa. They had snakes for hair, and brazen claws. Medusa, the most famous, was once a beautiful maid, but was changed into a G. by Athena in punishment for her relations with Poseidon, and whosoever gazed at her became a stone. Perseus (q.v.) slew her with a mirror and a sword. With her head he turned Polydectes to stone. Athena afterwards received the head and wore it on her aegis (q.v.).

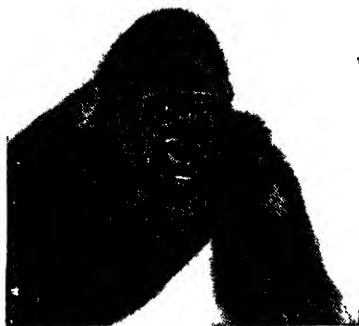
Gorgonzola, lt. tn. in Lombardy (q.v.), 10 m. NE. of Milan (q.v.). It gives its name to the famous cheese, though this is now produced chiefly in Novara (q.v.). Pop. 6000.

Gorhambury, seat of the earls of Verulam, in Herts, England, 2 m. W. of St Albans. In the grounds are the ruins of Francis Bacon's (q.v.) mansion.

Gori, tn. in Georgia, 47 m. NW. of Tiflis. It has been known since the 7th cent., and is the bp. of Stalin. Pop. (1956) 33,000.

Gorilla, large man-like ape, which is a native of West Africa. It is the largest of the anthropoid apes. It can be distinguished from the chimpanzee by the small ears, elongated head, the presence of a deep groove alongside the nostrils, the small size of the thumb, and the great length of the arm, which reaches half-way down the shin-bone in the erect posture. It also differs from the chimpanzee in its greater size, the height of a male G. being from 5½ to 6 ft. Its weight is approximately 30 to 40 stone. In colour it is blackish, but the hair on the head and shoulders often has a reddish tinge. It is a vegetable feeder, taking fruits and

succulent green plants. The G. spends most of its time on the ground, although it is a skillful but slow climber, and is not so very ferocious, for when attacked it generally avoids an encounter, but when driven into a corner is a dangerous enemy on account of its enormous strength. G.s have not yet been tamed, and fully adult ones have never been seen alive in captivity. The G. was first made known to zoology by Paul du Chaillu in 1861. Later a second type was discovered, which is indigenous to high altitudes in the Belgian Congo.



GORILLA
Harry Miller

Gorinchem, or Gorkum, tn in the prov. of South Holland, Netherlands, 23 m. ESE. of Rotterdam. Its fine fortified gateways from the 17th cent. are typical examples of Dutch architecture. Its salmon fisheries are important, and the chief exports are grain, hemp, and cattle. Pop. 19,310.

Goring, George Goring, Lord (1608–57), soldier, son of the earl of Norwich. He was appointed governor of Portsmouth, 1639, and was concerned in the Army Plot, which he betrayed to Parliament. Nevertheless, when the Civil war broke out he declared for the king and held Portsmouth for him for a time. He took part in the battle of Marston Moor, and later commanded royalist forces in the W., where the plundering of his soldiers made him notorious. He was defeated after Naseby at Langport, and fled to France. He d. at Madrid.

Goring: 1. Vil. and par. in Oxon., England, 9 m. NW. of Reading. It is an angling and boating centre and has a Norman church. Icknield Way crossed the Thames at this point. At G. Heath is the 200-year-old charity foundation known as Alnutt's Hospital. Pop. (vil.) 1800; (par.) 2172.

2. Goring-by-Sea, the name of a suburb of Worthing (q.v.), Sussex.

Gorizia (Ger. *Görz*): 1. Prov. of It. in E. Friuli-Venezia Giulia (q.v.). It is generally low-lying, and is bounded on the

E. by Yugoslavia, and on the S. by the Gulf of Trieste (q.v.). The chief riv. is the Isonzo (q.v.). The prin. tns include G. and Gradisca (q.v.). Area 182 sq. m.; pop. 137,000. See **FRIULI**.

2. It. tn, cap. of the prov. of G., on the Isonzo, 19 m. S.E. of Udine (q.v.). With Gradisca it forms an archbishopric; the cathedral is partly 14th cent. The tn is overlooked by a fine old castle, now a museum. There are textile manufs., and a trade in wine, timber, and fruit. Pop. (tn) 31,600; (com.) 42,500. G., among other strong positions, was demanded from Austria by Italy in April 1915 as the price of her continued neutrality in the First World War and as 'compensation' for the advantages already gained by Austria (a party to the Triple Alliance, q.v.) in the attack on Serbia (see **AUSTRIA**). In Aug. 1916, after Italy's entry into the war, the tn was taken by It. troops (see **ISONZO**), but on 28 Oct. 1917, as a result of the It. defeat at Caporetto (q.v.), the Austrians reoccupied G. for a short time.

Gor'kiy, Maksim (real name Peshkov, Aleksey Maksimovich) (1868-1936), Russian writer and politician. B. in an artisan family, he became an orphan and had to fend for himself. He received no formal education, and in his youth changed jobs frequently and wandered much about Russia (see his *Childhood*, 1913, *My Apprenticeship*, 1918, and *My Universities* 1923). G. began writing in 1892; in 1898 he became famous in Russia for his collected tales, and in 1902 also abroad through his play *The Lower Depths*. Having started with romantic stories of tramps, gipsies, etc., he then turned to Chekhovian stories and plays about dreary lives and useless intellectuals, and later to the artistic exposure, on Marxist lines, of capitalist society (the novels *Mother*, 1907, *The Artamonov Business*, 1925, and *Klim Samgin*, 1927-36). He supported the Bolsheviks, and, together with Krasin (q.v.), was their chief source of income before and during the revolution of 1905 (q.v.). From 1906 to 1913 he lived as an émigré on Capri, and in 1909 joined Bogdanov (q.v.) in forming the anti-Leninist Left-wing Bolshevik sub-faction 'Forward.' Together with Lunacharskiy (q.v.) G. developed the ideology of 'God-building,' trying to supplement Marxism with a new religion of the future collectivised working man (*Confession*, 1908). During the First World War he lived in Russia, editing a monthly, directing a publishing house, and occasionally helping the Bolsheviks. After the Feb. revolution (q.v.) in 1917 he organised a non-Bolshevik Left Social Democratic group called 'New Life,' after its paper pub. by G. He was opposed to the seizure of power by the Bolsheviks (see **OCTOBER REVOLUTION**), but from 1919 co-operated with the regime and through his influence saved many intellectuals from terror and starvation. From 1921 to 1925 he again lived in Italy, first criticising the Soviet regime, then becoming its apologist, and finally returning to the U.S.S.R. He was

put at the head of the Soviet Writers' Union, formed in 1932 by party decree (see **COMMUNIST PARTY OF THE SOVIET UNION**) to replace all former literary associations, which were summarily dissolved, and proclaimed founder of the school of Socialist Realism (q.v.). During the last years of his life G. was a personal friend of Stalin and one of the chief glorifiers of all aspects of Stalinism, including the forced labour camp system (*White Sea Canal*, 1934). He suffered from tuberculosis from his youth and probably d. naturally; but at the Bukharin show trial in 1938 he was declared to have been a victim of the 'blocc of Rightists and Trotskyites.'

Gor'kiy (until 1932 Nizhny Novgorod): 1. Oblast in Central Russia, E. of Moscow, situated largely on the lowland N. of the Volga and Oka rvs. and covered with mixed forests. It has peat deposits. Area 17,800 sq. m.; pop. (1956, without G. city) 1,522,000, mostly Russians (since 13th cent.). There are engineering, chemical, and other industries in the highly industrialised S., lumbering in the N.; there is also flax, potato, and dairy farming, and a large hydro-electric station. The prin. tns are G. and Dzerzhinsk.

2. Cap., economic and cultural centre of the above, directly subordinated to the gov. of the Russian Federal Rep., the largest city in Russia E. of Moscow. It is situated on the r. b. of the Volga, at the mouth of its right trib., the Oka, and is one of the most important industrial centres of Russia, with a large engineering industry, including vast automobile plant (built 1930-2) and Sormovo (q.v.) transport engineering plant. There are also Diesel motor, machine-tool, etc., works, oil processing, glass, woodworking, and various light and food industries. G. is a major transportation centre—the biggest riv. port in Russia, 5 railway lines, and airport. There are a univ. (formed 1918, abolished 1930, re-estab. 1931), a polytechnic institute (formed 1898 in Warsaw, evacuated during the war, and reopened in G. 1918), and sev. other higher education estabts. The drama theatre, one of the oldest in Russia, was formed in 1798. There is a kremlin (fortress) built 1374-1511, and there are interesting churches and other buildings of the 17th-19th cents. Pop. (1956) 876,000 (3rd in the Russian Federal Rep., 5th in the U.S.S.R.; 1897, 96,000; 1917, 148,000; 1920, 88,000; 1926, 217,000; 1939, 644,000). G. was founded in 1221 by the Grand Prince of Vladimir on the site of a Bulgarian settlement as a frontier fortress against the Volga Bulgarians (q.v.) and the Mordva, and played the same role in the long struggle against the Tatars. It became the cap. of Suzdal'-Nizhny Novgorod principality 1350, and rivalled the growing influence of Moscow. It was annexed by Muscovy in 1392, and was its base in the conquest of Kazan' in 1552. In the Time of Troubles (q.v.) G. was one of the centres of the patriotic forces; here, in

1611, K. Minin (q.v.) launched the movement for the liberation of Moscow from the Poles. The ann. fair, founded in 1525 for the economic struggle against Kazan' at Makar'yev near G. (transferred to G. in 1817), was the biggest in Russia and made G. the prin. commercial centre of the country; it was abolished in 1930. G.'s industrial development started early in the 19th cent. (flour mills); its heavy industry dates from 1849 (Sormovo works); sev. factories were evacuated to G. from Riga during the 1st World War. Great construction started in 1930 and within 5 years the city attained its present industrial eminence. From 1719 G. was prov. cap.; 1920-34 it was cap. of G. Ter., comprising the present G., Arzamas, and Kirov Oblasts, Udmurt, Mari, and Chuvash Autonomous Reps. During the period of the Dictatorship of the Proletariat (q.v.) it was one of the main Bolshevik strongholds.

Gorkum, see GORINCHEM.

Gorleston, seaside resort of Norfolk, England. It is part of the bor. of Great Yarmouth, and is situated on the S. side of the Yare.

Görlitz, Ger. tn in the dist. of Dresden, on the l. b. of the Lusatian Neisse (q.v.), 55 m. E. of Dresden (q.v.). It dates from the 13th cent., and was cap. of the duchy of G., 1377-98. It passed to the Hapsburg (q.v.) family in 1526, to Saxony in 1635, and to Prussia in 1815. It was much damaged during the Second World War. Since 1945 the part of the tn on the r. b. of the riv. has formed a separate tn in Poland (see ZGORZELEC). G. has a 14th-cent. castle, a 15th-cent. church, and some fine old houses. It is an important lignite-mining region, and has textile and engineering industries. Pop. 85,000.

Gorlovka, city in the Stalino Oblast of the Ukraine, 20 m. NE. of Stalino. It is one of the important and rapidly growing industrial centres of the Donets Basin (q.v.), with coal mining and large engineering, chemical, building materials, and food industries. There are mercury mines in the N. suburb Nikitovka. The nearby settlement Trudovaya is the terminus of an oil pipeline from the Grozny oilfields in the N. Caucasus. G. has had a mining school since 1876, one of the first in Russia. Founded in 1867 as a coal-mining settlement, it has been a tn since 1930. Pop. (1956) 240,000 (4th in Donbas; 1897, 2000; 1926, 23,000; 1939, 109,000).

Gorna Dzhumaya, see BLAGOYEVRAD.

Gorna Oryakhovitsa, prov., see TYRNOVO.

Gorno-Altay, autonomous oblast (prov.), part of the Altay Kray in W. Siberia (R.S.F.S.R.). It lies in the Altay Mts and is inhabited by various Altaic tribes, including the Oirats, and Russians, who make up more than half the pop. Livestock raising is the main occupation, but manganese, gold, and mercury are worked. Pop. 150,000.

Gorno-Altaysk (formerly Uiala, 1932-48 **Oyrot-Tura**), tn in S. Siberia, cap., economic and cultural centre of Gorno-Altay autonomous oblast (q.v.), 60 m.

SE. of Biysk. It was founded as a vil., becoming a tn in 1928. Pop. (1956) 25,000, mostly Russians.

Gorno-Badakhshan, autonomous oblast (prov.) of the Tajik Rep., U.S.S.R. It lies in the Pamir Mts, which contain various minerals, including gold, radium, lead, and tin. Chief tn Khorog. See also BADAKHSHAN.

Gorse, see ULEX.

Gorsedd. The G. of Bards or, to give it its full title, 'The Gorsedd of Bards of the Isle of Britain,' is a society of Welsh bards founded in 1792 by that erudite stone-mason, the Glamorgan bard Iolo Morganwg. To a very large extent it was devised by his romantic imagination to replace the long-defunct medieval order. He claimed that the G. had been maintained in secret by the bards of Glamorgan for many centuries after it had been forgotten by the rest of Wales and that its doctrines and ritual derived from the druids. These doctrines were first printed by Wm Owen Pughe in 1792 in his introduction to *The Heroic Elegies of Llywarch Hen*, an introduction based on a manuscript work by Iolo, *The History of the Bards*. Iolo claimed that the very foundation of the bardic order was the doctrine of Universal Peace and Good Will, that its aim was the rational investigation of all matters contributing to the attainment of truth and wisdom, and that its maxims from time immemorial were the equality and fraternity of all its members. As Iolo called himself 'the Bard of Liberty,' the principles which he claimed for his system of Welsh bardism would seem to owe far more to the maxims of the Fr. Revolution and to Freemasonry than to any historical evidence we have of the anct druids and bards.

In a G. held on Primrose Hill, London, in 1792 he first initiated into the 'secret rites' of his bardic order some of his fellow-members of the Gwyneddigion, a patriotic club of London Welshmen and patrons of the elisteddod (q.v.); but it was from the merging by Iolo of the G. ceremonial with the elisteddod itself at Carmarthen in 1819 that his romantic and allegorical system, with its imaginative fusion of modern and archaic elements, was enthusiastically adopted and practised henceforth by the elisteddod bards.

The G. of to-day makes no claim to druidic or anct bardic origin but forms an integral and influential part of the organisation of the National Elisteddod of Wales in that about nine-tenths of the National Elisteddod Court or governing body consists of members of the G.

The G. is specially responsible for administering and conducting the rich and colourful bardic ceremonial of the Elisteddod, now developed into a picturesque and very popular national pageant. No National Elisteddod of Wales may be held without ceremonial proclamation by the G. at least a year and a day in advance and a formal presentation of the first copy of the List of Subjects to the Archdruid. This, with the

other G. ceremonies, normally takes place in the open air within a circle of stones specially erected for the purpose 'in the face of the sun, the eye of light'; but it is within the Eisteddfod Pavilion that the G. conducts its 2 prin. bardic ceremonies, the crowning and the chairing of the victors in the poetry contests. Following the chanting of the traditional prayer invoking divine protection and peace, the Archdruid opens each G. session by partially withdrawing the Grand Sword from its sheath thrice with the challenge 'Is it Peace?' to which the bards thrice respond with the cry 'Peace.'

Among other picturesque rites are the offering to the Archdruid of the Hirlas Horn, representing the wine of welcome, and the Aberthged or sheaf of corn entwined with wild flowers. The former is carried by a matron and the latter by a maiden accompanied by a troupe of little girls who perform their floral dance within the circle of stones.

The Archdruid of Wales, elected for a term of 3 years, is vice-president of the National Eisteddfod Court, and supreme head of the G. of Wales and the branch-Gorseddau of Brittany and Cornwall. The G. comprises 3 orders: (1) the Ovate Order (green robe); (2) the Order of Bards and Musicians (blue robe); (3) the Druidic Order (white robe). Queen Elizabeth II was initiated an Ovate member of the G. when princess at Mountain Ash, 1946. See BARD, EISTEDDFOD

Gorski Kotar, see OGULIN.

Gorst, Sir John Eldon (1835-1916), statesman, b. Preston, educ. at St John's College, Cambridge. In New Zealand he was of great value in establishing peace between the authorities and the Maoris. He returned to England and was called to the Bar, 1865, and in the same year was elected M.P. for Cambridge. He sat for Chatham, 1875-92, and for Cambridge Univ., 1892-1906. He formed one of the Fourth Party (q.v.). He was solicitor-general, 1885-6; under-secretary for India, 1886; hon. secretary to the Treasury, 1891. He took a great interest in education, and was vice-president of the Committee of Council on Education until 1902. His attitude had always been independent, and he broke with his party on the question of Tariff Reform.

Gort, John Standish, V.C., 1st Viscount of Hamsterley (1836-1946), soldier, elder son of 5th Viscount G. of Limerick. Educ. at Harrow and Sandhurst. Succeeded father as 6th Viscount G. of Limerick, 1902. Commissioned Grenadier Guards, 1905. Captain and A.D.C. to Sir Douglas Haig, 1914. Brigade major, 4th (Guards) Brigade, and later 1st (Guards) Brigade, rendering good service at Festubert and Loos, 1915. Appointed to command 4th Grenadier Guards, he led the battalion with great courage and ability at opening of third battle of Ypres, 31 July 1917. Took part in battle of Cambrai, 1917. In Mar. 1918 commanded 1st Battalion Grenadier Guards at Arras. Conspicuous service near Hamel while in temporary command of 1st (Guards)

Brigade, notably at Flesquières. Frequently wounded, was awarded V.C. for his great gallantry. Nine times mentioned in dispatches. In 1932 he became director of military training in India. Commandant Staff College, 1936. Military secretary, War Office, 1937; C.I.G.S. same year. Promoted general, K.C.B., 1938; G.C.B., 1940. Led B.E.F. to France, 1939. Successfully conducted the forced retreat to the Dender and Escout without allowing his successive fronts to be broken. Equally successful in withdrawing the B.E.F. to the perimeter covering the Dunkirk beaches where most were evacuated. Passed over as commander-in-chief home forces in favour of Gen. Sir Alan Brooke (later Lord Alanbrooke), G. was appointed inspector-general. Governor and commander-in-chief, Gibraltar, 1941. Later as governor and commander-in-chief Malta he achieved in the defence of Malta one of the greatest successes of his career, and in 1943 he was promoted to field marshal. The Maltese people, in token of their admiration, presented him with a sword of honour when he left in 1944 to become high commissioner of Palestine and Transjordan. Here he won the confidence of all but the extremists of the Arab and Jewish parties; but at the end of a year his health broke down and he was compelled to resign. Viscount G. of Hamsterley (U.K.), 1945.

Gorton, Samuel (d. 1677), Eng. sectary, founder of the Amer. sect of Gortonites, b. about 1592 at G., Lancs. In 1637 he sailed to Boston, Massachusetts, where he was continually involved in religious disputes. He pub. in England, 1646, an account of his grievances against the Massachusetts Gov. in a tract entitled *Simplicities Defence Against Seven-Headed Policy*. See L. G. Jones, *Samuel Gorton: A Forgotten Founder of Our Liberties*, 1896.

Gorton, see MANCHESTER.

Gortschakow, see GORCHAKOV.

Görz, see GORIZIA.

Goschen, George Joachim, 1st Viscount (1831-1907), statesman, son of a London merchant of Ger. origin; b. London, educ. at Rugby and Oriel College, Oxford. In 1856 he became a director of the Bank of England; entered Parliament as Liberal member for the city of London, 1863; was appointed paymaster-general, 1865. In 1868 G. sat in Gladstone's Cabinet as president of the Poor Law Board, and became First Lord of the Admiralty in 1871. In 1878 he was elected representative for Great Britain at the international monetary conferences held in Paris. In 1880, as ambas. to the Porte, he persuaded Turkey to fulfil the obligations to Greece to which she was bound by the treaty of Berlin. He became an uncompromising opponent to Home Rule policy and in 1887, under Lord Salisbury's administration, sat as a Liberal-Unionist and accepted the chancellorship of the Exchequer. In 1877, after being defeated at Liverpool, he became member for St George's, Hanover Square. In 1888 G. carried out a conversion of part of the

national debt. "In 1895 he was again First Lord of the Admiralty. He was a firm and decided opponent of Chamberlain's Tariff Reform policy. G. pub. many works, his most important being *The Theory of Foreign Exchanges*, 1863. See life by A. R. D. Elliot, 1911.

Gosforth: 1. Urb. dist. of Northumberland, England, 2 m. N. of Newcastle upon Tyne, largely residential. Here is the co. Rugby football ground. Pop. 24,660.

2. Vil. of Cumberland, England, in the Ennerdale (q.v.) rural dist. It has a notable sandstone Runic cross. Pop. 800.

Goshawk, or *Accipiter gentilis*, bird still found in many countries of Europe, but practically extinct (except for 'escapes') in the Brit. Isles. It was formerly found here in fairly large numbers, and was used in the sport of falconry. Its extinction practically coincides with the disappearance of our large forests. The male bird is much smaller than the female. In colour the bird is brown on the upper part of the body and white underneath. The tail has dark bands across it. See also **HAWK**.

Goshen: 1. A dist. in Lower Egypt lying nearest to Canaan on the N.E. frontier, through which ran the Wady Tumilat with its fertile valley, given by Pharaoh to the relations of Joseph.

2. City, cap. of Elkhart co., Indiana, U.S.A., on the Elkhart R., 24 m. ESE. of South Bend, in dairying, livestock, and grain area. It manufs. steel, wood, and rubber products, burlap, bags, and hydraulic presses. It is the home of many Mennonites and the seat of G. College. G. was settled in 1828 and chartered as a city in 1868. Pop. 13,000.

Goshen, or **Goschen**, Land of, part of Bechuanaland in Brit. South Africa. In 1882 some Boers founded a rep. here, which was recognised by President Kruger. In 1884 it was placed under Brit. protection. At Kraalpan, in G., on 12 Oct. 1899, the first shots of the Anglo-Boer war were fired. See **STELLALAND**.

Goslar, Ger. tn in the Land of Lower Saxony (q.v.), on the N. slope of the Harz Mts (q.v.), 47 m. SE. of Hanover. It was founded by the Emperor Henry I in 922. In the Middle Ages it was a tn of importance and an imperial residence. The imperial palace remains, and there are numerous medieval houses and a 13th-cent. tn hall. In Rammelsberg, to the S., there are silver, gold, copper, zinc, and lead mines which have been worked since the 10th cent. Pop. 40,000.

Gosnold, Bartholomew (d. 1607), Eng. navigator who sailed from Falmouth, 1602, in the *Concord*, and discovered Cape Cod and some neighbouring is. He was the leader of an expedition which discovered the Virginian Capes, and founded Jamestown in 1606, where he d.

Gospel, The, trans. of Gk *Euangelion*, 'Good News', the tidings of salvation offered to man in Jesus Christ. The term is also applied to written records of the teaching and saving work of Jesus Christ, especially to the 4 Gospels of the N.T.

Gospellers: 1. Various precursors of the Reformation, such as Wyclif and the Lollards, who laid much stress upon preaching the gospel and upon the dissemination of the knowledge of the gospels among the people.

2. An antinomian sect which arose about the time of the Reformation.

3. The term is also used in the Church of England for the priest who reads the gospel, usually either from the N. side of the altar or from the middle of the choir.

4. Amer. nickname for a sensational revivalist—a 'Hot Gospeller.'

Gospels, name for the 4 accounts in the N.T. of the character, life, and teaching of Christ. The first 3 G.—Matthew, Mark and Luke—are called 'synoptic,' because they summarise the chief events in the life of Christ and, generally speaking, cover the same ground, while the fourth gospel, John, follows independent lines. The fourth also is more theological, and probably aims at supplying the deficiencies of the others. See **MATTHEW**; **MARK**; **LUKE**; **JOHN**.

Gospels, **Harmony of the**, a conflation of the full texts of all 4 gospels complete to form a continuous and consistent narrative. The earliest known was that of Tatian, *Diatessaron*, c. 166 AD. See **NEW TESTAMENT**.

Gosport ('God's Port'), tn and important naval depot to the W. of Portsmouth Harbour, Hants, England, connected with Portsmouth by a floating bridge and a ferry. G. is traditionally associated with the services and with the R.N. in particular, and many service estab. are based within its boundaries. Formerly G. was the premier naval supply base, ships' anchors, cables, powder magazines, chains, and sails, as well as food supplies, being manufactured or produced there. It was one of the main points for the embarkation of troops in 1944. Its yacht-building and sail-making industries are world-famous, many of the 'America's Cup' racing yachts having been built and fitted out here. The pars. of Alverstoke and Lee on the Solent lie within the boundaries of G. Pop. 63,000.

Gossamer, fine filmy substance, something like cobwebs seen floating in the air in autumn. It is the web spun by certain small spiders; the threads are invisible when spun, but a number are woven together by the wind. See **SPIDER**.

Gossan, term common amongst the miners of Cornwall for the outcrop of a lode. The G.s are often composed of rich veins of metal, and are very easily worked, owing to the fact that, being on the surface, they have been thoroughly oxidised.

Gossau, vil. in the canton of St Gallen, Switzerland. Lace and embroideries are made there. Pop. 8000.

Gosse, Sir Edmund William (1849-1928) poet, critic, and essayist, b. London, the son of Philip Henry G., the naturalist. In 1867 he was appointed assistant librarian in the Brit. Museum. In 1875 he became translator to the Board of Trade, in 1884 Clark lecturer on Eng. literature at Trinity College, Cambridge, and in 1904

he was made librarian to the House of Lords. His style is characterised by its acidity. His chief works are *On Viol and Flute*, 1878; *Studies in the Literatures of Northern Europe*, 1879; *New Poems*, 1879; *From Shakespeare to Pope*, 1885; *Raleigh*, 1886; *Life of Congreve*, 1888; *History of Eighteenth-century Literature*, 1889; *Robert Browning*, 1890; *History of Modern English Literature*, 1897; *Life and Letters of Dr John Donne, Dean of St Paul's*, 1899; *Life of Jeremy Taylor*, 1904; *French Profiles*, 1905; *Coventry Paimore*, 1905; *Life of Sir Thomas Browne*, 1905; *Father and Son* (a study of his early family life), 1907; *Henrik Ibsen*, 1908; *Two Visits to Denmark*, 1911; *Portraits and Studies*, 1912; and *Life of Swinburne*, 1917. His chief service to letters is perhaps his introduction of modern European writers to Eng. readers. For his services to Scandinavian literature he was created in 1901 a knight of the Norwegian order of St Olaf, and in 1925 he received a Brit. knighthood. In early manhood he was a friend of R. L. Stevenson, with whom he exchanged many interesting letters. *Selected Essays* were pub. in 1928. See life by E. Charteris, 1931.

Gosse, Philip Henry (1810-88), Eng. naturalist. After farming in Canada he returned to England and pub. *The Canadian Naturalist*, 1840. In 1847, after visiting Jamaica for the Brit. Museum, he pub. *Birds of Jamaica*. Among his other works are *Actinologia Britannica*, 1858-60, and *The Romance of Natural History*, 1860. See life by his son, Edmund G., 1890, and *Father and Son*, 1907.

Gossec, François Joseph (1734-1829), Fr. composer of Belgian origin, b. Hainaut, went to Paris in 1751 and, through Rameau's influence, became conductor to the wealthy patron La Poupellinière, for whose orchestra he wrote symphonies. He also produced much chamber music and in 1760 performed a *Requiem* in which, as in other works, he anticipated the experimental manner of Berlioz. From 1795 to 1816 he was prof. of composition at the Conservatoire. He wrote over 30 symphonies, church and chamber music, ballets and theatre music, and 19 operas.

Gosselies, tn in the prov. of Hainaut, Belgium, 4 m. N. of Charleroi. It has coal-mines, and manufs. cutlery, soap, and linen. Pop. (1955) 10,600.

Gosson, Stephen (1558-1624), playwright, satirist, and clergyman, b. Kent. Educ. at Oxford, he went to London and wrote plays, which are now lost, and pastorals. Moved by a sermon preached at Paul's Cross during an outbreak of the plague, he abandoned the theatre and became one of its severest critics in his prose satire, *The School of Abuse*, 1579, directed against 'poets, pipers, players, jesters, and such-like caterpillars of a Commonwealth.' It uses antithesis and alliteration in the style of Lyly (q.v.), who was G.'s contemporary at Oxford; dedicated to Sir Philip Sidney, it was not well received by him, and is believed to

have evoked his *Apologie for Poetrie*, 1596. G. took orders in 1584, and d. rector of St Botolph's, London. See E. Arber's ed. of *The School of Abuse*, 1868.

Gosudarstvennyye Duma, see DUMA.

Göta: 1. Canal in S. Sweden connecting the navigation of the Götaelf with the Gulf of Bothnia by Lake Wener (Venern), Vykeon, Wetter (Vettern), Boren, and Roxen, and the Baltic with the Kattegat (Cattégat). It terminates at Mem, 3 m. from Söderköping. Length about 50 m., depth 10 ft., breadth 79 ft. Including lakes some 235 m. are navigable and there are 57 locks. It was projected by Gustavus Vasa, but not carried out till 1810-32, under Count Platen and Telford.

2. Riv. flowing from Lake Wener to the Kattegat. It branches into two at Kongälf, the S. branch passing Göteborg (Gothenburg). It is 68 m. long and navigable. To avoid the falls of Trollhätta near its source the Trollhätta Canal was constructed.

Gotaha, see GÖTHA.

Gotama, see BUDDHA AND BUDDHISM.

Göteborg, see GÖTHEBURG.

Gotenhafen, see GDNIA.

Gotha, Ger. city in the dist. of Erfurt, 15 m. W. of Erfurt (q.v.). It was mentioned as early as 770 as 'Gotaha.' In the 17th cent. it was the cap. of the duchy of G., and from 1826 to 1918 of the duchy of Saxo-Coburg-G. (q.v.). In the 18th cent. it became a famous centre of publishing and geographical research; in 1764 the publishing house of Justus Perthes brought out the first issue of the *Almanach de Gotha*. Ger. socialist groups met here in 1875 to decide on their policies. The former ducal palace of Friedenstein dates from 1643, and among other notable buildings are the Renaissance Rathaus, the 18th-cent. Friedrichsthal palace, and some medieval churches. Chemical, precision instruments, machinery, and foodstuffs are manufactured. Pop. 55,000.

Gothalunia, see CATALONIA.

Gotham, *Tales of the Mad Men of*, collection of jests, representing the absurd doings and sayings of the people of G.—a Notts par. near Trent junction. The simplicity of the inhab. has become proverbial, but was said to have been assumed originally to avert a king's anger. One absurdity attributed to them is the building of a wall round the cuckoo to shut it in. These tales are similar to the *asteria*, or *facellae*, ascribed to the 5th-cent. Alexandrian philosopher, Hierocles. The tales were first printed about 1550 under the title, *Merrie Tales of the Mad Men of Gotham*, collected by A. B. (1st Andrew Boorde). The people of Abdera in Thrace had a similar reputation for folly, and such stories exist among almost all races of mankind. G. is sometimes used as a nickname for New York, having been first so applied by Washington Irving in *Salmagundi*, 1807-8. See J. O. Halliwell's reprint of the *Merrie Tales*, 1840, and *Nursery Rhymes*, 1842; W. Hazlitt, *Shakespeare Jest-books*, 1864; J. Ashton, *Chap-books of the Eighteenth*

Century, 1882; E. Cunningham, *Amusing Prose Chap-books*, 1889. For simoleon stories generally, see W. Clouston, *Book of Noodles*, 1888, new ed. 1903, and W. Busch, *Deutscher Volkshumor*, 1877.

Gothenburg (Swedish *Göteborg*), situated on the R. Göta, and next to Stockholm, the cap., the most important city of Sweden. The tn is quite modern, having been rebuilt to a large extent in consequence of numerous fires, but it was originally founded in 1618 or thereabouts by Gustavus Adolphus. It has an excellent harbour, seldom obstructed by ice,

garden belonging to the Horticult. Society. Pop. 380,090. The prov. of G. and Bohus has an area of 1948 sq. m. and a pop. of 579,551.

Gothic Architecture, see ARCHITECTURE, 6.

Gothic Language and Script. Gothic language belongs to the E. branch of the Teutonic or Germanic linguistic family. It is mainly known from a trans. of the Bible, only partly preserved, which is extant in 7 fragmentary codices: *Argentinus* (187 folios; preserved at Upsala); *Glissensis* (1 double folio; at Giessen);



D. McLeish

GOTHENBURG

The museum, the Christina church, and the town hall

which affords a shelter for a large number of vessels from all parts of the world. G. has a univ. (founded in 1889), philosophical faculty, and an academy of commerce. Its commercial importance dates from the continental blockade of 1806, when it became the chief Brit. depot of N. Europe. It is the prin. port in Sweden and the centre of the shipping industry. The harbour has been enlarged and the navigation school was rebuilt in 1916, while a marine museum was opened in 1913. Among its manufacturing industries are shipbuilding, cotton-spinning, iron and steel milling, and it produces sugar, paper, leather, sailcloth, etc. It receives about one-fourth of the total foreign commerce of Sweden, and has a valuable fishing industry. The lower portion of the tn, along the riv., has broad streets, partly formed by canals. The exchange, cathedral, tn hall, and museum deserve special mention among the buildings of G., and it has a fine

Carolinus (4 folios; at Wolfenbüttel); 4 *Codices Ambrosiani* (at Milan: A, 204 folios; B, 156 folios; C, 2 folios; D, 3 folios); and *Taurinensis* (4 folios, which belong to *Ambrosianus A*; now at Turin). On the authority of the Byzantine writers Philostorgios, Socrates, and Sozomenos, this trans. is attributed to Ulfilas, or Vulfila (q.v.), the great Gothic bishop and apostle (c. 311-83). The preserved MSS. are of the 5th (*Codex Carolinus*) or 6th cent. Another contemporary text (*Codex Ambrosianus E*; 8 folios, 3 of which are in the Vatican Library), known as *Skeireins*, is a 4th or 5th cent. exegesis of the Gospel of St John. Moreover, there is a fragmentary calendar in *Codex Ambrosianus A*; and there are some Gothic passages with Lat. transliteration, notes on Gothic pronunciation, 2 alphabets, and 2 series of numbers in the *Salzburg Alcuin Codex* preserved in the National Library at Vienna. Finally, there are notes in

Ostrogothic language (and script) in Lat. commercial documents on papyrus: one, c. 551, written in Ravenna, is now in the National Library at Naples; another one, formerly at Arezzo, and now lost, is preserved in a copy of 1731.

All these texts are in the Gothic or the Moeso-Gothic script in 2 varieties; whereas the Biblical texts are in uncial, the other documents are in cursive script. The Gothic alphabet was invented by Ulfilas. It consisted of 27 letters, mainly based on the Gk uncial script as used in his time. Some 19 or 20 letters were taken over from the Gk alphabet (the letter *theta*, however, received the phonetic value of *hw*), 2 letters were borrowed from the Runes (q.v.) or freely invented, and the remaining signs, partly modified, were taken over from the Rom. character. The Gothic texts have a very great philological importance; they are the oldest-known literary documents written in a Germanic language. This early G. L. and S., however, had not the slightest influence on the subsequent Germanic culture.

Earlier than these literary texts, but containing only 1 to 3 words, are three 3rd- or 4th-cent. Gothic runic inscriptions: (1) a spearhead from Kovel (Volhynia); (2) another one from Dahmsdorf near Müncheberg (Brandenburg); and (3) a big golden ring found in 1837 at Petrossa de Jos, prov. of Buzau (Rumania), which reads *gutanowi hailag*, meaning 'sacred to Jove of the Goths'.

In anct Gaul Gothic was spoken until the 8th cent., whereas in some parts of the Black Sea region Gothic, it would seem, was spoken up to the 18th cent.

'Gothic Line,' see ITALIAN FRONT, SECOND WORLD WAR.

Gothic Revival, see ARCHITECTURE, 8.

Gothicus, see CLAUDIUS II.

Gothland, Gottland, Gotland, or Gautland, largest of the Swedish is. in the Baltic, forming a prov. (län) of Sweden, off the E. coast. It is about 40 m. E. of Sweden, about 1215 sq. m. in area, 83 m. long. The surface is 200-300 ft above sea-level. The coast is steep, but the interior mostly level. Visby (Wisby) on the W. coast is the chief tn, connected by rail with Helsingborg in the interior. The chief occupations of the people are agriculture, cattle-raising, shipping, fishing, and lime-burning. Timber, marble, sandstone, and lime are exported to Stockholm. There are some fine architectural remains. By the 8th cent. G. was trib. to Sweden, Visby being one of the most important trading tns of N. Europe till late in the 14th cent. In 1030 St Olaf probably introduced Christianity there. It belonged to the Ger. Hanseatic League in the Middle Ages, being subject alternately to Denmark and Sweden from 1361. In 1645 it was finally ceded to Sweden. Pop. 57,526.

Goths, Teutonic people who played an important part in the barbarian invasions of W. Europe in the 4th and 5th cents. According to their own tradition their original home was in Scandinavia. The

earliest mention of the G. belongs to the time of Alexander the Great, and is that of the Gk traveller Pytheas of Massilia. According to Pytheas a tribe of *Guttones* lived and gathered amber on the Prussian shores of the Baltic. Tacitus mentions the *Gothones*, evidently the *Guttones*, but they are neighbours of the Lygii, and no longer on the coast. Their certain hist. begins in the early years of the 3rd cent., in the reign of Alexander Severus. They had then founded an empire on the N. shore of the Black Sea and about the delta of the Danube. They greatly increased their numbers by conquering other Teutonic tribes, and came into conflict with the Romans, into whose prov. of Dacia they made successful inroads. They devastated Moesia and Thrace, vanquished and killed Decius, and withdrew on receiving great sums of money and a promise of yearly tribute. In 258-9 they crossed the Black Sea, the Bosphorus, and the Hellespont, embarked on the Mediterranean, pillaged the shores of Asia Minor, burnt the temple of Ephesus, and sacked Athens. In 269 they equipped an immense fleet, ravaged Crete and Rhodes, and, returning through Thessalonica, were completely crushed by the Emperor Claudius. They recovered, however, and the Emperor Aurelian secured a term of comparative peace only by ceding to them Dacia and the l. b. of the Danube. During this period the G. mingled with the Romans, and were influenced by the Rom. civilisation; they were converted to Christianity.

It was at this epoch that Ulfilas trans. the Bible into the Gothic language (q.v.). By this time the G. were divided into 2 great groups, the Visigoths (or W. G.) inhabiting the slopes of the Carpathians in Dacia and the Ostrogoths (or E. G.) who lived on the shores of the Black Sea. This separation became complete when, after conflicts with Constantine (321), who imposed peace upon them, and with Valens, whom they subdued, the Huns made a successful irruption among them and completely crushed their empire. The Ostrogoths submitted to the Huns, the Visigoths crossed the Danube, and settled finally within the Rom. Empire (376). Their hist. deviates at this point.

The Visigoths made peace with Valens and were allotted cantonnements. Many accepted service in the Rom. army, others, who came to be known as the *Moesogoths*, devoted themselves to agriculture under Rom. protection. In 387, provoked by the vexatious conduct of the Rom. functionaries, they revolted and forced the Emperor Theodosius to conclude a new treaty with them, by which some received land and others provisions in exchange for military contingents. After the death of Theodosius, Alaric I (q.v.) led an insurrection which marks an epoch in the hist. of Europe. The Visigoths under Alaric devastated Macedonia, Greece, and Illyria, then, passing into Italy, they took and pillaged Rome (410). Alaric d. the same year. Withdrawing from Italy, the Visigoths under Alaric's

successors overran S. Gaul and Spain. Under Wallia (415-19) they obtained from the Romans *Aquitanica secunda*, and fixed their cap. at Toulouse. The Gothic kingdom was actually now a vassal kingdom of the Rom. Empire; the G. greatly helped the Romans in their conflicts with the Vandals, the Huns, and the Alans, and in their turn reaped benefit from the Rom. civilisation. Theodoric I played an important part in the reduction of the Huns under Attila at Châlons. Theodoric II and Euric conquered Spain and extended their kingdom as far as the Loire. They estab. a constitution and adopted some of the arts of civilised life. But they were forced to retreat by the Franks under Clovis (507), and their kingdom was completely broken up by the Saracens (711). They gradually became absorbed in the Lat. peoples of Spain and Languedoc (see CATALUNYA).

The *Ostrogoths* took part with the Huns under Attila in the expedition against Gaul and so encountered their kinsmen, the Visigoths, in battle, sharing in the terrible defeat at Châlons (451). Under their greatest sovereign, Theodoric, they defeated and killed Odoacer (q.v.), king of Italy (493), and Theodoric reigned wisely in Italy until his death (526), dealing even-handed justice to the conquered and to those of his own race. On the death of Theodoric the Emperor Justinian organised a campaign against the Ostrogoths with the object of wresting Italy from them and restoring it to the emperors of Constantinople. After a protracted struggle Justinian's general, Narses, succeeded in crushing them, and with their defeat (553) Theodoric's kingdom came to an end. The Ostrogoths dispersed; many of them were absorbed in the Rom. Empire, some returned to the Danube, where they commingled with other Teutonic peoples. See E. Gibbon, *Decline and Fall*, 1776-88, and T. Hodgkin, *Italy and her Invaders*, 1899.

Gotland, see GOTHLAND.

Goto, or Gotto, group of is., 5 in number, belonging to the Jap. archipelago, and forming the westernmost group in the channel of Korea, W. of the is. of Kyushu. The largest of the group is about 25 m. long. The G. have important fisheries, but are also noted for their scenic beauty and form a national park. Cap., Fukue. Pop. 33,000.

Götterdämmerung, 'twilight of the Gods' (who were not eternal in Norse mythology). See MYTHOLOGY, Teutonic; RAGNAROK.

Gottfried, Johann Ludwig, see ABELIN, J. P.

Gottfried von Strassburg, Middle High Ger. epic poet, the most brilliant of the 13th cent. (fl. c. 1200), contemporary with Hartmann von Aue, Wolfram von Eschenbach, and Walter von der Vogelweide. In 1210 he began his great epic, *Tristan und Isolde*, a free adaptation of Fr. originals (especially that of the troubadour Thomas of Brittany). He d. between 1210 and 1220, leaving his work unfinished. It was completed by Ulrich

von Turheim (1233-86) and Heinrich von Freiberg (c. 1300). G. foreshadows the death of the knightly ideal by his glorification of *die Minne*. His poem furnished the subject for Wagner's great opera. See Bechstein's ed., 1881, and F. Ranke's ed., 1930; eds. and translations of *Tristan* by W. Hertz, 1877, and W. Stinrock, 1885; also works of W. Goltner, 1887; E. Nickel, 1927; and F. Ranke, 1930.

Gothard, St., see ST GOTTHARD.

Gothard, Matthias, see GRÜNEWALD, MATTHIAS.

Gothelf, Jeremias, see BRITZUS, ALBRECHT.

Göttingen, Ger. tn in the Land of Lower Saxony (q.v.), on the Leine, 60 m. S. by E. of Hanover (q.v.). In the Middle Ages it was a textile centre and a member of the Hanseatic League (q.v.). It suffered severely during the wars of religion. The famous univ. founded here in 1737 by George II of England, was rechartered in 1838 as 'Academia Georgica Augusta'; the univ., which had 3600 students in 1954-5, with its sev. institutes and library, the Academy of Sciences (founded in 1751 by Haller, q.v.), and the Max Planck Association for the Furtherance of Science have made G. an intellectual centre. There is a symphony orchestra and a film studio, and the tn is known for its optical and precision instruments. The *Göttinger Hainbund* was a school of poets and writers who included the Stolbergs, Bürger (qq.v.), Voss (d. 1826), Höltz (d. 1776), and Lelsswitz (d. 1806). The 'Göttingen Seven' were 7 profs. (including Ewald, the Grimms, and Gervinus, qq.v.) expelled for political reasons by King Ernst August in 1837. Pop. 80,000.

Gottschalk, Gotescaulus, or Fulgentius (c. 805-68), Ger. monk of the 9th cent. Son of Berne, a Saxon count, he early entered the monastery of Fulda. Prevented from securing release from his vows by his abbot, Rabanus Maurus, he was transferred to the Benedictine convent of Orbais (Soissons). G. studied St Augustine's writings and adopted the doctrine of twofold predestination (to loss or salvation). He visited Italy (837-8 and 845-8), but his views roused much opposition. At the synod of Mainz, 848, he was found guilty of heresy by Hincmar, and condemned at an assembly at Quirou, 849. He d. imprisoned in the monastery of Hautvilliers, Rheims.

Gottschall, Rudolf von (1823-1909), Ger. dramatist, poet, and critic, b. Breslau. His sympathy with the revolutionary movement of 1848 produced the tragedies *Die Marseilleais*, 1848; *Wiener Immortellen*, 1848; and *Ferdinand von Schill*, 1851; the first poems, *Gedichte*, 1850, and the lyric, *Die Göttin*, 1853. Among his plays are *Pitt und Fox* (historical comedy), the most successful, 1854; the tragedy *Mazeppa*, 1859, his best play; and *Katharina Howard*, 1872. In 2 epic poems, *Die Göttin*, 1853, and *Carlo Zeno*, 1854, he largely abandoned the exaggerated style of his earlier poems. Among his novels may be mentioned *Im*

Banne des schwarzen Adlers, 1875; *Das Goldene Kalb*, 1880; *Die Papierprinzessin*, 1883; and *Die Tochter Rübezahl*, 1889. In his valuable *Die deutsche National-literatur des 19. Jahrhunderts*, 7th ed. 1901-2, and also in a work on poetry, 1858, 6th ed. 1893, he advocates the cause of 'modern ideas' in literature. He also ed. 2 Leipzig journals, *Blätter für literarische Unterhaltung*, 1864-88, and the review, *Unsere Zeit*. See autobiography, *Aus meiner Jugend*, 1898, and biographical study by M. Brasch, 1892.

Gottsched, Johann Christoph (1700-66), Ger. critic and writer, b. Königsberg. He was prof. of poetry in 1730, of logic and metaphysics in 1734. G. tried to abolish the bombastic affectations of the second Silesian school, and substitute a nobler drama based on Fr. models. His *Kritische Dichtkunst* appeared in 1730, founded on Boileau's *Art poétique*. He also wrote *Beiträge zur kritischen Historie der deutschen Sprache* (8 vols.), 1732-44. He became later involved in a violent literary controversy with Bodmer and Breitinger. Lessing (1729-81), destroyed his reputation as a 'literary dictator,' and Gellert (1715-69) replaced him as a popular favourite about 1750. In spite of his dogmatism, G. was one of the founders of Ger. classicism. See E. Wolf, *Gottscheds Stellung im deutschen Bildungsleben*, 1895-7; G. Wanke, *Gottsched und die deutsche Literatur seiner Zeit*, 1897; E. Reichelt, *Ein Gottsched-Denkmal*, 1900, and *Gottsched: Biographische Skizze, Kleines Gottsched-wörterbuch*, 1902; G. Schimansky, *Gottscheds deutsche Bildungsziele*, 1939. Reichelt founded the Gottsched Gesellschaft in Berlin in 1901.

Gottskálsson, Oddur (d. 1556), Icelandic divine and administrator, one of the pioneers of the Reformation in Iceland and the first translator of the N.T. into Icelandic, 1540. He trans. from the Lat. of the Vulgate.

Gottwald, Klement (1896-1953), Czech Communist, b. of Catholic peasant stock at Dedice, Moravia. While learning carpentry in Vienna he joined a Social Democrat group. He deserted from the Austrian Army and joined the new Czech Army in 1918. In 1921 G., then a shop steward, joined the newly formed Czech Communist party. He soon became a prominent figure in Slovak politics and in 1930 was made general secretary of the Czech Communist party. G. criticised the Munich capitulation, 1938, and went into exile in Moscow, where he remained until 1945, meeting Benes (q.v.) in 1943. Vice-premier in the Czech coalition gov. of 1945, he became premier after the elections in the following year. He used this position to complete the Communist seizure of power in 1948; in 1948 he succeeded Benes as president. His presidency was characterised by a complete subservience of Czech affairs to Soviet interests, and by the sensational 'deviationist' trials in which sev. of his former associates were executed. G. d. in Moscow. His successor as president,

Zapotocky, d. in 1957. See also CZECHOSLOVAKIA, *History*.

Gottwaldov (formerly Zlín): 1. Region (*kraj*) in central Czechoslovakia, part of the former prov. of Moravia (q.v.). Its W. half lies in the basin of the Morava (q.v.), and its E. half contains part of the Carpathians (q.v.). Area 1970 sq. m.; pop. 594,000.

2. Czechoslovak tn, cap. of the region of G., named after Klement Gottwald (d. 1953), Communist president of the rep., 1948-53. It is a modern tn, with a great shoe industry (Bat'a). Pop. 59,800.

Götz, Hermann (1840-76), Ger. composer, b. Königsberg. Chiefly remembered for his opera *The Taming of the Shrew*, 1874, which is still occasionally heard in Germany. Another, *Francesca da Rimini*, is forgotten, but his symphony in F major, his *Spring Overture*, his piano concerto, and his refined songs deserve revival.

Götz von Berlichingen, see BERLICHINGEN, GÖTZ VON.

Gouda, or Ter-Gouw, tn in the prov. of S. Holland, Netherlands. It is situated on the N. side of the R. Gouwe, where it joins the Yssel, 11 m. N.E. of Rotterdam. The tn was destroyed by fire in 1552, and later rebuilt. Formerly the prin. industry was cloth weaving, and later the making of clay pipes. It now has factories for stearine candles, cigars, and yarn, and the G. cheese is celebrated. Its shipping trade is large and it is one of the chief markets of S. Holland. The fine organ and the stained-glass windows of the Grote Kerk are famous. Pop. 40,440.

Goudimel, Claude (c. 1510-72), Fr. composer, b. Besançon. By 1549 he was living in Paris, where he contributed *chansons* to a book pub. by Du Chemin, with whom he was associated in business. He was living at Metz for about 10 years from 1557, when he wrote his last music for the Rom. Church and joined the Protestants. He had already pub. a Huguenot psalter of Psalms in motet form in 1551, but at that time these were still used by the Catholic Church as well. When Metz became unsafe he returned home to Besançon and later went to Lyons, where he perished in the massacre of the Huguenots on 27 Aug. 1572. There seems to be no truth in the tradition that he was in Rome in his early years. He contributed *chansons* for sev. voices to many collections, also 4-part settings of odes by Horace and of sacred songs by Muret to 2 books in 1556, and settings of Psalms to various psalters.

Gougane Barra, lake on the upper R. Lee, co. Cork, Rep. of Ireland, set amid beautiful mt scenery. In a tiny is. on the lake was the site of the hermitage of St Finnbar, patron saint and founder of Cork; there is an ann. pilgrimage to the modern cells and oratory on 25 Sept.

Gouge, see CHISEL.

Gough, Sir Hubert de la Poer (1870-), Brit. general, educ. at Eton and Sandhurst. Joined 16th Lancers, 1889. Tirah expedition, 1897-8. Severely wounded in South African war, 1899-1902. Prof.

at Staff College, 1904-6. As brigadier-general in command of 3rd Cavalry Brigade at the Curragh in Mar. 1914, he was the prin. officer who refused to be employed against any resistance from Ulster to the Home Rule Act if passed. In France and Flanders in the First World War, with 2nd Cavalry Div. and 7th Div., 1915; 1st Army Corps, 1916. Commanded the ill-starred Fifth Army, 1916-18. Pozieres, Thiepval, Beaumont-Hamel operations on Ancre, Langemark, and St Quentin—promoted to lieutenant-general. He was unsuccessful in defence at the Somme, Mar. 1918, and was superseded. Chief of the allied mission to the Baltic, 1919. Retired with rank of general. In *The Fifth Army*, 1931, he vindicated his conduct of affairs in 1918. He also wrote *The March Retreat*, 1934, and *Soldiering On*, his autobiography, 1954.

Gough, Hugh, Viscount (1779-1869), Brit. field marshal, b. Limerick. He was a descendant of Francis G., bishop of Limerick in 1626. In 1794 he obtained a commission in the army, and saw active service in South Africa and in the West Indies. In 1809 he was called to take part in the Peninsula war, and joined the army under Wellington. He was severely wounded at Talavera and had his horse shot under him. He was afterwards promoted lieutenant-colonel. G. also fought at the battle of Barrosa, and again at Vittoria and Nivelle, where he was once more severely wounded. He returned home at the close of the war and enjoyed a respite of some years from active service. In 1830 he was promoted major-general. In the first Chinese war he was appointed commander-in-chief of the Brit. forces and achieved many victories in the face of great difficulties. In 1862 he was made a field marshal. See R. S. Rait, *Life and Campaigns of Hugh, 1st Viscount Gough, Field Marshal*, 1903.

Gough, Richard (1735-1809), antiquary, b. London, d. Enfield. His father was a director of the East India Company. G. showed signs of an unusual intelligence at an early age, and at 16 pub. a work called *Geography Modernised*. He went to Cambridge in 1752 and began his work there on Brit. topography, for which purpose he travelled widely. He pub. some 20 major works among which are *History of the Society of Antiquaries*, 1768, and *The Sepulchral Monuments of Great Britain*, 1786-96, and a good ed. of Camden's *Britannia*, 1789.

Goujon, or Gougeon, Jean (c. 1515-68), Fr. sculptor of the Renaissance, known as the Fr. Phidias and the Correggio of sculpture. He is first mentioned in 1540 as working on St Maclou at Rouen. In 1541 he went to Paris, joining P. Lescot in the decoration of St Germain l'Auxerrois, his work there including the 'Évangélistes' and 'Déposition de la Croix' (now in the Louvre). G. decorated the Château d'Ecouché for the Huguenot constable Anne de Montmorency, 1544-7. His chief productions there were 'La

Victoire allée,' 'La Foi,' 'Le Sacrifice d'Abraham' (Chantilly). He did woodcut illustrations (1547) to Martin's trans. of Vitruvius. G.'s first period of work upon the Louvre was between 1547 and 1550, including the staircase of Henri II, figures of the Oeil-de-Bœuf, caryatides of the Salle des Cent-Suisses in the Louvre, and figures of the Fontaine des Innocents, 1549. His beautiful 'Diane Chasseresse,' originally in the courtyard of the Château d'Anet, is now in the Louvre. By 1560 the Louvre decorations were completed. G.'s name disappears from the list of 'Maîtres Maçons' under Lescot, 1560-1. The tradition that he was shot during the St Bartholomew massacres (1572) is now no longer accredited. See L. Audot and A. Pottier, *Essai sur la vie de Goujon*, prefixed to Révell's engravings of G.'s works, 1827-44, and R. Lister, *J. Goujon*, 1903.

Goulaun, local name for standing stones in Ireland. See ARCHAEOLOGY; NEOLITHIC; STANDING STONES.

Goulburn: 1. City of New South Wales, Australia, on R. Wollondilly, at an altitude of 2100 ft. It is the see of an Anglican bishop and a Rom. Catholic archbishop. G. is the centre and railway junction of various rural dists., whose activities include fat-lamb raising and cultivation of orchards. Pop. 19,740.

2. Riv. of Victoria, Australia, rising near Emerald Hill in the Great Dividing Range (Wonnangatta co.), flowing N. and NW. through the Jamieson and Wood's Point goldfields, and falling into Murray R. about 10 m. above Echuca. Irrigation works have been carried on in the valley since 1893, the chief being the Eildon Dam, completed in 1955. The course above Seymour is much impeded by rapids, fallen trees, and rocks, and not easy to make navigable. Total length about 345 m.

Gould, Benjamin Apthorp (1824-96), Amer. astronomer, b. Boston, son of B. A. G., the educationist (1787-1859). He was organiser and director of the National Astronomical Observatory at Córdoba, Argentina, from 1868 to 1885. His *Uranometria Argentina*, 1874, giving estimated magnitudes of 8000 stars visible from Córdoba, did for the S. hemisphere what Argelander's *Atlas*, 1843, did for the N. G. also wrote *Índice de Zonas Estelares*, 1884.

Gould, Sir Francis Carruthers (1844-1925), caricaturist, b. Barnstaple, son of Richard Davie G., architect. He was a member of the Stock Exchange for some 20 years of his early life, and later assistant editor of the *Westminster Gazette*. He early evinced great skill in caricature and was for many years a contributor of illustrations to the *Pall Mall Gazette* and *Truth*. He was a notable authority and lecturer on parl. matters. His brilliant series of cartoons in the *Westminster Gazette* were doubtless that part of his work which primarily earned for him his knighthood in 1906. Dealing with parl. controversy from the liberal standpoint he pithily summed up

a political situation in cleverly executed sketches often adapted from scenes in Shakespeare or Dickens, or from the drawings of Tenniel in *Alice in Wonderland*. His draughtsmanship was rough, but the humour was unfailing. His pubs. include *Protissart's Modern Chronicles*, 1902-23; *Who Killed Cock Robin?* 1897; and *Tales told in the Zoo*, 1900.

Gould, George Jay (1864-1923), Amer. financier, son of Jay G. Privately educ., he obtained control of large railway interests, including the Missouri Pacific, Texas and Pacific, and the International and Great Northern. He was president of the Manhattan Elevated, 1892.

Gould, Gerald (1885-1936), journalist and poet, b. Scarborough. He was educ. at London Univ. and Oxford, where he was a fellow of Merton from 1909 to 1916. Taking up journalism, he was on the staff of the *Daily Herald* and later of the *Saturday Review*. His *Collected Poems* appeared in 1929. His critical works include an *Essay on the Nature of the Lyric*, 1909, *The English Novel of To-day*, 1924, and *Democritus, or, the Future of Laughter*, 1929.

Gould, Jay (1836-92), Amer. capitalist, educ. at Hobart Academy and on his father's farm. For a time he was engaged in surveying (1852-6), and in the lumber and tanning business. By 1857 he became chief shareholder in the small bank at Stroudsburg, Pennsylvania. He began buying up railroad bonds at this time, becoming a broker in New York, 1859. After the panic of 1857 he became president and manager of the Rutland and Washington Railway, later uniting it with the Saratoga Railway. He was president of the Erie Railroad Company, 1868-1872, and introduced into the company 'Boss' Tweed and other rascals, who unscrupulously enriched themselves at the expense of the public. He controlled the Union Pacific from 1873 to 1878, and invested largely in the stocks of other railways and telegraph companies, finally controlling them all. He made about \$25,000,000. His worst action was a scheme formed with 'Jim' Fisk for cornering the gold market, leading to the Black Friday panic, 1869. He has been called the Napoleon of Amer. finance.

Gould, Nathaniel (1857-1919), novelist, b. Manchester. He had a wide experience in journalism in England and Australia. His very numerous pubs. include about 130 novels of a sporting character. Among the best known of these are *The Double Event*, 1891, *Thrown Away*, 1894, *The Miner's Cup*, 1896, *A Gentleman Rider*, 1898, *A Stable Mystery*, 1900, *The Rajah's Racer*, 1904, and *A Run of Luck* 1907. Other pubs. were *On and Off the Turf in Australia*, 1896, *Sporting Sketches*, 1900, and *The Roar of the King*, 1900.

Gould, S. Baring-, see BARING-GOULD.
Gounod, Charles (1818-93), Fr. composer, b. Paris. His mother was an accomplished pianist. He showed an early passion for music, and passed brilliantly through the Conservatoire, under Halévy, Paer, and Lesueur,

receiving at the age of 21 the Prix de Rome. During his period of study there he wished for a time to take holy orders; but nothing came of it and he continued to devote himself wholly to composition, at first mainly of church music. The great success of his third mass aroused in him the ambition to explore a wider field; and he turned to lyric drama. But it was not until 1851 that he was accorded any recognition as an operatic composer; in that year *Sapho* was produced, and was very generously received. In 1852 he wrote choral music for a production of Ponsard's *Ulysse*, and 2 years later a favourable reception was given to his *La Nonne sanglante*. His real success, however, came with the production of *Faust*,



CHARLES GOUNOD

1859, in which G.'s dramatic talent reaches its zenith. Its immense popularity was never matched even by the best of his later operas. *La Reine de Saba*, 1862; *Mireille*, 1864; *Roméo et Juliette*, 1867; *Cinq Mars*, 1877; and *Polyeucte*, 1878, although some contain favourite themes, and his comic operas, *Le Médecin malgré lui*, 1858, and *Philemon et Baucis*, 1860, are charming. He also wrote oratorios, *Redemption* and *Mors et Vita*, which were popular in London, where G. stayed during the Franco-Ger. war and afterwards until 1875. Other works include 8 cantatas, 9 masses, 3 Requiems, *Stabat Mater*, *Te Deum*, *De Profundis*, *Ave, verum corpus*, *Pater noster*; 3 symphonies; some pianoforte compositions, including the *Funeral March of a Marionette*; *Méditation sur le Prélude de Bach (Ave Maria)* for soprano voice, and pianoforte, and organ. His own *Mémoires d'un artiste* were pub. posthumously, 1896. See also lives by M. A. de Bovet, 1890; P. L. Hillemacher, 1906; C. Bellaigue, 1910; and J. G. Prod'homme and A. Dandelot, 1911.

Gour, see GHÛR.

Gouraud, Henri Joseph Etienne (1867-1946), Fr. general, b. Paris. Rendered distinguished service in Moroccan campaign, 1911-14. In the First World War he succeeded Gen. d'Amade as commander-in-chief of the Fr. forces in the Dardanelles, having previously commanded the 1st Corps on the W. front. By 1919 he had become commander-in-chief of the army of the Levant. In his able defence in the Argonne sector he earned the sobriquet the 'Lion of the Argonne.' Was wounded by a shell in 1915, losing an arm. In the allied offensive, July-Aug. 1918, he defeated the Ger. forces E. of Rheims. Accorded the grand cordon of the Légion d'Honneur. Sent, in 1919, to act as Fr. high commissioner to Syria, where he succeeded in establishing the Fr. mandate. Member of the Conseil Supérieur de la Guerre, 1922. Military governor of Paris, 1923-1938.

Gourd. Most of the plants bearing G.s, large, fleshy, many-seeded fruits with hard rinds, are of the genus *Cucurbita*. *C. maxima* (pumpkin), *C. moschata* (squash), and *C. pepo* (marrow, pumpkin) are anns.; *C. ficifolia* and *C. foetidissima* perennials. The bottle G., or calabash, is *Lagenaria vulgaris*; the bitter G., *Citrullus colocynthis*; while the genera *Coccinia*, *Cyclanthera*, *Luffa*, *Momordica*, *Telfairia*, and *Trichosanthes* also contain G. plants.

Gourdon, Fr. tn. cap. of an arron., in the dept of Lot. It has a trade in truffles and nuts. Pop. 3900.

Gourko, Joseph Vladimirovich (1828-1901), Russian count and general of Lithuanian extraction. His claim to distinction is based on his services in the Russo-Turkish war of 1877, where he greatly distinguished himself, capturing Sofia, Philippopolis, and Adrianople. He also took part in the Crimean war, being stationed at Belbek. For his services in the Russo-Turkish war he was decorated with the order of the second class of St George. From 1879 to 1880 he was governor of St Petersburg, and from 1883 to 1894 governor-general of Poland.

Gourmont, Remy de (1858-1915), Fr. author and critic, b. at the Château de la Motte, Bazoches-en-Houlme, Orne. He was attached to the Bibliothèque Nationale at Paris from 1883 to 1891. He helped to found the *Mercur de France* in 1890, and ed. this and sev. other journals. He was at first the theorist of the symbolists, but later abandoned this school. His style was impeccable, and he indulged in much philosophic finesse in his critical essays.

He also wrote plays: *Lilith*, 1892, *Le vieux roi*, 1897, and pub. sev. collections of short stories, including *Histoires magiques*, 1895, and *Un cœur virginal*, 1907. Selections from his writings were trans. by R. Aldington in 1932. See G. Rees, *Remy de Gourmont*, 1940.

Gourock, burgh and holiday resort of W. Renfrewshire, Scotland, situated at the mouth of the Clyde, 2 m. W. of Greenock.

There is considerable passenger traffic by the Clyde steamers. Pop. 9300.

Gout, disease, mainly restricted to males, characterised by acute onset of inflammation of joints and accompanied by an excess of uric acid in the blood. The big toe joint is affected more than any other. The exact cause of the disturbance of metabolism which leads to an attack of G. is not exactly known. The tendency to it is inherited. Less common now than in the 19th cent., it is not altogether certain that its diminishing incidence has resulted from the leaner living of modern times. It is more likely that the genetic strain is becoming attenuated. Paroxysms of G. come on with little warning and it is not unusual for the sufferer to find himself afflicted on waking in the morning. Precipitating causes of an attack in one who is predisposed are damp, chill, overtiredness, and, most important of all, diet. The gouty subject must not take those things which are apt to increase the uric acid content of the blood. Thus alcohol must be avoided and food must be simple, plainly cooked and without condiments. Liver, heart, kidneys should be excluded from the diet and red meat should be taken in moderation. Bland fluids should be drunk in quantity. Fortunately the drugs colchicum and cinchophen are specific for G. and, together with rest and warmth, will usually cut an attack short. Prolonged courses of the drugs are required in bad cases. Deposits of uric acid, or 'gouty tophi,' are apt to occur round the joints in patients who have suffered from G. for many years.

Gouvion St Cyr, Laurent, Marquis de (1764-1830), Fr. marshal, b. Toul. He took part in the Prussian and Polish campaigns of 1807 and 1808, and in Aug. 1812 obtained a victory over the Russians at Polotsk, for which he was created a marshal of France. St Cyr accompanied Napoleon all through the Russian campaign. On the restoration of the Bourbons he was created a peer, and in July 1815 was appointed war minister. He d. at Hyères (Var). Besides his military career, he was the author of many works of value, notably of *Mémoires pour l'histoire militaire sous le directoire, le consulat, et l'empire*, 1831. See Gay de Vernon, *Vie de Gouvion Saint-Cyr*, 1857.

Govan, on the S. bank of the Clyde, since 1912 a suburb of Glasgow (q.v.), with which it is connected by railway and electric tramways. It owes its importance to the shipbuilding and other industries of the Clyde, and possesses some of the largest shipbuilding yards and engineering works of the Brit. Isles.

Government implies sovereignty, which is exercised by persons vested with the supreme authority in an independent political society or state. The body of rulers is the sovereign body of the G., or the supreme G. The rest of the members of a political society are the subjects.

Origin of Government.—The most remarkable theory of the origin of G. or political societies is that of the social

compact. This theory assumes the formation in the past of an original compact between the governor and governed, or between all the subjects, whereby it was mutually agreed to surrender all the sovereign powers to a sovereign or a sovereign body for the benefit of all. The theory was a reaction against the absolutism of the equally dogmatic patriarchal theory of the origin of G. With Hobbes the social compact was useful in getting rid of the theory of the erection of political societies on a basis of force: a theory which, as it evolved the state from a delegation of 'permanent and inextinguishable power' to the sovereign, gave no room for the existence of justice and moral obligation. Locke assumed the prince or other ruler to have been a party to a contract by which the sovereign agreed to govern according to the laws and for the public good, while the people agreed to obey so long as the prince remained faithful to his part of the bargain. Rousseau rejected the idea of a bilateral contract between sovereign and people, and postulated a literally social compact. His theory was the revolutionary expression of equality, while those of the Eng. philosophers were consistent with an aristocratic or monarchic form of G. The doctrine of Rousseau bound all to all and allowed society to exist solely by reference to this free convention of associates. Bentham's utilitarian analysis of the origin of G. by reference to the 'immense interest which men have in maintaining a government' assumed a similar historical basis. This theory regarded a political society or state as a conscious human contrivance. Herbert Spencer thought of the evolution of political power and institutions as determined unconsciously, principally by war. Jenks thought all political communities owed their existence to successful warfare, and as a consequence are forced to be organised on military principles. Maine, harking back to the patriarchal theory, saw the microcosm of the state in the family, expanded and developed into clans and tribes. McLennan and Morgan conceived of large hordes of people existing as groups before the family as imagined by Aristotle, Maine, and others. There are other theories of the origin of G., notably the eccles. notion of G. by divine appointment.

Forms of Government.—Aristotle and most later writers have classified the regular forms of G. into (1) monarchy, or G. by a single person; (2) aristocracy, or G. by a select council; (3) commonwealth, or G. by the many. Corresponding to these terms are the forms of tyranny, oligarchy, and democracy. It is to be noted, however, that the term democracy is confounded with corrupt plutocracy by the modern totalitarian propagandists. Blackstone wrote that in a democracy public virtue was more likely to be found than in either of the other forms of G., that in aristocracies there was more wisdom but less honesty than in a rep., and

less strength than in a monarchy; and that a monarchy was the most powerful form of any, because the legislative and executive powers were united in the hand of one prince. But a hybrid and paradoxical form of G. like the limited constitutional monarchy of the Brit. Commonwealth presents features which are not readily susceptible of such orthodoxy, while the republican G.s of the U.S.A. have been characterised by no little corruption, much wisdom, and great strength. Seeley's classifications of societies into tribal, theocratic, and states proper, with an elaborate classification of states by reference to the proportional weight or distribution of governmental authority as between the locality and the central body was more in accordance with modern facts. It is immaterial how G.s designate themselves, if they do not conform to set patterns. Seeley rejected the Aristotelian classification as useless, because it inquires after one feature only, viz. that of the number of rulers, and results therefore in classifying together dissimilar states. He omits politico-ethical considerations, regarding both state and G. not as contrivances of the conscious human will, but as instinctive natural growths. He adopts many cross-divs. of states based on the degree of local G. and the curtailment of liberty in special directions; liberty in this connotation being primarily freedom from excessive G., and secondarily parl. or responsible G. Such divs. conduce to a clearer understanding of the characteristics of different kinds of G. Modern writers distinguish mostly between parl. and non-parl. (see CABINET), or some other div. based on representation. G.s are also referred to as autocratic or constitutional. The ancient Grecian states were at first truly democratic; but the later communities were in the truest sense self-governed, and there never has been so close an approximation to the literal ideal of democracy as the Gk city state, where every citizen took his turn at the business of G. In ancient Rome the G. was, under the kings, the monopoly of an exclusive caste of citizens; while in the later days of the rep. the inhab. of one tn controlled a world-wide empire. On the estab. of the empire Rome in its declining days fell under the extreme autocracy of Caesarism. In the earlier days of England the feudal form of G. was in its essentials autocratic, but the mutual contractual relations between the king and his vassals, and between the latter and under-tenants, soon paved the way to a system of representation (see ELECTORATE).

Up to the time of the First World War Russia and Turkey were commonly regarded as being under autocratic forms of G., and post-war developments in those 2 countries seemed only to emphasise this position. But while the Ottoman Empire, till comparatively recent times at all events, lagged far behind the rest of Europe in its adherence to a despotic form of monarchy, the Russian autocracy evolved itself into G. by depts or a

bureaucracy (q.v.). At the present day in Turkey all sovereignty belongs to the Grand National Assembly, but the Soviet G. of Russia is even more autocratic than the Tsarist G. Most G.s of the day are constitutional in form, and as such subject to varying degrees of popular control. The essence of a constitutional G. is that the executive powers are limited by legal restriction contained in a written or conventional constitution, and such prerogative powers as may remain to it are, in reality for the most part, popular privileges. Constitutions (q.v.) are said to be either rigid or flexible: rigid constitutions are written documents containing fundamental laws or legal principles which cannot be changed otherwise than by some exceptional procedure: a flexible constitution is one, like the Brit. constitution, which recognises no difference between constitutional and other laws, but permits the legal sovereign Parliament to change them at will. In practice, however, there exist in flexible constitutions principles which no Parliament would undertake lightly to alter. Most of the great nations of the day, except Great Britain, have adopted rigid constitutions, under which the rights of the subject are expressly guaranteed by the G. The common element of all constitutional forms of G. is that the sovereign legislative powers are really exercised by assemblies of a popular and elected character. In most federal nations the functions of G. are divided between the central G. and the constituent states, there being in most cases written constitutions strictly defining the powers of the former and leaving to the latter all such powers as are not thus expressly taken away. This is so in the U.S.A., but in Canada the authority of the dominion Parliament is indefinite, while that of the provs. is defined. The Swiss Federal Assembly, like Congress, can legislate only on a limited number of matters, and it has no power of annulling laws passed by the different canton G.s.

Totalitarian Government.—Totalitarian G. is a modern variant of dictatorship and, as exemplified in Fascist Italy, Nazi Germany, Communist Russia, and Falangist Spain, had its own variants. In ancient republican Rome there were periods when the absolute rule of a person or group prevailed and the term dictatorship dates from this time, when in an emergency a man might be appointed dictator by the Senate for 7 years and held absolute power for that term after which he had to retire and constitutional rule was restored. Modern dictatorship is either personal or that of a group or class—military or proletariat—though even in the latter case it is commonly embodied in the person of a leader. Until the emergence in the inter-world-war period of the totalitarian G.s, it was axiomatic that most G.s of the day were constitutional and more or less democratic, as opposed to authoritarian. The totalitarian states of Germany and Italy were the antithesis of constitutional and

democratic. In them constitutional forms were abolished and G. was the function of a dictator and his clique—in short, the totality of powers, executive and legislative, were vested in a dictator or leader, while in the constituent states or provs. delegated powers were given to dist. leaders. The cardinal feature of a totalitarian state is the single-party system of G. as opposed to the liberal conception of G., which assigns to the State only certain conventional spheres of control while leaving as many as possible of the residuary powers to the free decision of the individual. The 'total state' extends the sphere of state influence over the whole of life, both private and public, and exacts subordination of the individual to the demands of the State. Thus in Germany, the Nazi party, in Italy the Fascist, in Russia the Communist, and in Spain the Falangist are or were the only political parties permitted. Denazification in post-war Germany, and the liquidation of the Fascist party in Italy during the Second World War, have abolished the totalitarian system in those countries, but the Falangist party still exists in Franco's Spain, while in Russia the Communist party holds undisputed sway.

Functions of Government.—These are threefold: (1) legislative; (2) judicial; (3) executive or administrative. The first is making and altering laws, the second interpretation and application, and the third carrying them into effect. In a narrower sense G. is identified with the executive, and this is really the modern connotation of the term. In most states these three functions are vested in separate entities, but in some cases, e.g. in certain crown colonies, all or the first and last may be vested in a single person or body of persons. The Brit. Cabinet illustrates in a striking manner the narrower sense of G. as above indicated. All the most important and far-reaching legislative measures of recent years have been introduced into Parliament by responsible ministers, and the skill, tact, and ingenuity of those ministers in 'piloting' their Bills through the Lower House, coupled with the fact that the Parliament Act has virtually abolished 2-chamber G., so identify these measures with the ministry that the remaining members of the House of Commons more and more assume the role of an automatic voting assembly, the majority in which is pledged to support the ministry of the day. Where, however, the ministry really reflects the opinion of the majority of the electorate, the principle of representative G. is in no wise disturbed, and the strong cohesive action of a unanimous Cabinet, faithfully endeavouring to interpret the popular will, makes for efficiency and dispatch in the functions of G.

After the First World War the intrusion, in Great Britain, of the G. in the economic sphere was accentuated by the policy of reconstruction. It was suggested that the experience of the war revealed the weakness of the old Cabinet system. The experiments of the War

Cabinet and the Imperial War Cabinet, effective in the time of war, did not become, as was hoped by Lloyd George, 'an accepted convention of the British constitution' (see also CABINET, IMPERIAL WAR). In 1917 a committee was appointed by the minister of reconstruction to inquire into the responsibilities of the various depts of the Central Executive G. This 'machinery of government committee' under the chairmanship of Lord Haldane (q.v.) reported that the business of the depts of G. should be distributed according to the nature of the service with which they were concerned; and it was proposed to reduce the number of depts and simplify the functions of the State, but to increase the number of ministers. The weakness of this report was that it contemplated the intrusion of the State into every corner of social and industrial activity, and the proposals were not implemented, though 2 new depts of state, the Ministry of Transport and the Ministry of Labour, were created. In time of major wars private enterprise is inadequate to the enormous strain on its resources. When the Second World War broke out a number of new ministries were quickly set up, including Ministries of Information, Aircraft Production, Home Security, Supply, Shipping, and Economic Warfare (or Blockade).

Science and Government.—A consequence of 2 world wars is the accelerated evolution of G. machinery for the promotion and use of scientific knowledge. Up to the outbreak of the First World War the only notable interventions of G. in the scientific sphere were the foundation of the National Physical Laboratory, the formation of the Development Commission, and the setting up of national research institutes. The need to apply scientific knowledge to everyday affairs became acute after 1914 with the necessity to develop new methods for war requirements, and a committee of the Privy Council for scientific and industrial research was appointed in 1915 and, in 1916, a Dept of Scientific and Industrial Research. Then in 1920 the Medical Research Council was estab. to administer funds accumulated out of the operation of the National Insurance Act, 1911, and in 1930 was set up the Agric. Research Council. The appointment by the G. after the Second World War of the Advisory Council on Scientific Policy was a further significant recognition, through war experience, of the fact that scientific knowledge and method must be considered in the direction of national affairs. The existence of this council, together with that of the newly estab. Defence Research Policy Committee, indicates that to-day the advice of scientists, like that of economists, is recognised as of immediate importance in the formulation of general national policies no less in peace than in war. To-day the Dept of Scientific and Industrial Research maintains, in addition to the National Physical Laboratory, which acts both as a central bureau of standards and a research

laboratory of applied physics, a building research station, a chemical research laboratory, food investigation institutes, a forest products research laboratory, a fuel research station, the geological survey, a radio research laboratory, and others, all of which are concerned not so much with basic research as with the development to some practical end of fundamental discoveries and ideas which have developed out of an academic environment.

See also INDIRECT RULE.

See H. Finer, *Theory and Practice of Modern Government*, 1932; J. T. Shotwell (editor), *Governments of Continental Europe*, 1940; J. J. Clarke, *Outlines of Central Government*, 1944; R. M. McIver, *Web of Government*, 1947; H. Morrison, *Government and Parliament*, 1954. See also bibliography of CONSTITUTION.

Governor, see STREAM ENGINES.

Governor, Colonial. The sovereign is represented in the colonies by G.s appointed during the royal pleasure, but not generally for more than 5 or 6 years. The powers and duties of G.s vary with the constitution of the colony. In former colonies that have become self-governing the G. is called a governor-general and is in the position of a constitutional monarch who acts on the advice of responsible ministers; but in crown colonies (q.v.) the G. was an autocrat exercising both legislative and administrative powers subject only to the control of the Colonial Office. *Inter alia*, the powers and duties of a G. were (1) to assent to, or withhold assent from, Bills passed by the local legislature, except in certain cases such as currency, army and navy, and foreign treaty matters, where he must reserve them for the royal assent (see COLONIAL LAW); (2) to issue warrants for the expenditure of public money; (3) to appoint and dismiss public servants; and (4) to defend the colony against external aggression. Recent constitutional changes in most colonial territories have considerably modified the G.'s powers, and apart from certain reserve powers G.s are commonly bound to act on the advice of their executive councils. In many territories public servants are now appointed by public service commissions. The G. is generally commander-in-chief of all forces in his territory. He is not entitled to leave the colony without royal permission.

Governor-General, described by the Imperial Conference of 1926 as the 'representative of the Crown, holding in all essential respects the same position in relation to the administration of public affairs in the dominion as is held by His Majesty the King in Great Britain, and . . . not the representative or agent of His Majesty's Government in Great Britain or of any department of that government.' The procedure for the appointment of G.-G.s was laid down by the Imperial Conference of 1930: (1) the parties interested in the appointment are the king and the dominion concerned; (2) the king acts on the advice of responsible ministers; (3) the ministers who

are responsible for this advice are the ministers in the dominion concerned; and (4) the ministers tender their formal advice after informal consultation with the king. The constitutional functions of the sovereign remain unimpaired by the changes. The old aspect of the royal prerogative is unchallenged, and the king can approve or reject any nomination. As the G.-G. ceased to be the channel of communication between gov. and gov., consideration was given to the representation of the home gov. in the dominions. The solution was a high commissioner to correspond with the dominion high commissioners in London. The first dominion to receive such a representative was Canada in 1929. Later high commissioners were appointed in Australia, the Union of South Africa, and New Zealand. A U.K. representative was appointed to the Rep. of Ireland in 1940, but, by way of concession to Irish prejudices, was not styled 'high commissioner.'

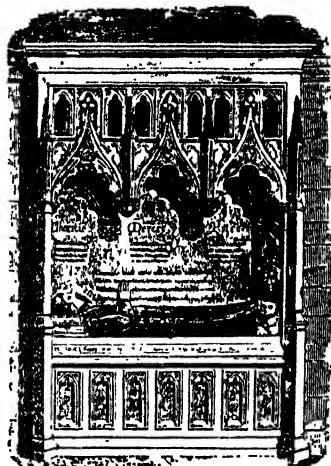
Gow, Neil (1727-1807), Scottish violinist and composer. He was reputed to be the best performer of reels and strathspeys in Perthshire, and noted for his skill in bowing. Raeburn frequently painted his portrait for his numerous patrons, the chief being the duke of Atholl. See W. Chambers, *Eminent Scotsmen*, ii, 1855; and Glen, *Scottish Dance Music*, ii, 1895.

Goward, Mary Ann, see KEELEY, MARY ANN.

Gowbarrow Park, estate in Cumberland, England, N. of Ullswater, the property of the National Trust. It contains the beautiful waterfall of Aira Force, and Aira Crag (1579 ft). Area 748 ac.

Gower, John (c. 1325-1408), Brit. poet. He was perhaps connected with Sir R. G., a landowner in both Suffolk and Kent, and was a friend of Chaucer, who called him 'moral Gower' in dedicating to him *Troilus and Creseide*. His first great work was *Speculum Meditantis* (The Mirror of One Meditating), written in Fr. on the subject of married life. Lost for centuries, it was discovered at Cambridge in 1895. It was followed by the *Vox Clamantis* (Voice of One Crying), written in Lat. and giving an account of the peasants' revolt of 1381, and attacking the misgovernment and social evils that had led to it. G.'s third, and only Eng., poem was *Confessio Amantis* (Lover's Confession), a work of 30,000 rhyming octosyllabic verses, consisting of tales and meditations on love, taken from Ovid, Valerius Maximus, Justin, the *Gesta Romanorum*, Cassiodorus, Isidorus, and other sources. It is the earliest large collection of tales in Eng. In his old age G. became blind. When about 70 he had retired to the Priory of St Mary Overies, the chapel of which is now Southwark Cathedral, where he spent his last years, and where his tomb is still to be seen. G. represented the serious and cultivated man of his time, in which he was reckoned the equal of Chaucer, but as a poet he is heavy and prolix. His collected works were ed. by G. C. Macaulay, 4 vols., 1899-1902. See W. P. Ker,

Essays on Medieval Literature, 1905; W. G. Dodd, *Courtly Love in Chaucer and Gower*, 1913; and G. C. Fox, *The Medieval Sciences in the Works of Gower*, 1931.



GOWER'S MONUMENT IN ST SAVIOUR'S CATHEDRAL, SOUTHWARK, LONDON

Gower, or Gwyr (crooked), peninsula in Glamorgan, Wales, situated between Swansea Bay and the Burry Inlet. Its rocky coastline is principally composed of limestone, with numerous caves, and the scenery is magnificent. Thurba Head is the property of the National Trust. In the 11th cent. it was overrun by the Normans, who built castles and churches; in the reign of Henry I it was inhabited by the Flemings, the descendants of whom still live there. It contains picturesque ruins and supposed Druidical remains. Pop. of G. rural dist., 11,700.

Gowers, Sir William Richard (1845-1915), physician and neurologist, b. London. Educ. at Univ. College, London; qualified in medicine 1867; M.D. 1870. In 1880 G. was appointed physician to the National Hospital, Queen Square, and later became prof. of clinical medicine at Univ. College Hospital and physician there. Besides being an outstanding neurologist, he invented the haemoglobinometer (for measuring the amount of haemoglobin in blood) and improved the haemocytometer (for counting the blood corpuscles). His writings include *Diagnosis of Diseases of the Spinal Cord*, 1880; *Epilepsy and other Chronic Convulsive Diseases*, 1881; *Diagnosis of Diseases of the Brain*, 1885; and *Manual of Diseases of the Nervous System*, 1886-8. See life by M. Crichley, 1949.

Gowrie, Case of, see CASE OF GOWRIE. **Gowrie Conspiracy**, mysterious plot against James VI of Scotland, afterwards

James I of England, which took place in Aug. 1600 and resulted in the slaughter of the earl of G. and his brother by the attendants of the king at G. House, Perth. John Ruthven, 3rd earl of G., and his brother, Alexander Ruthven, were, at the time, living on the earl's estate at Perth, and early in Aug. the king, with a few attendants, visited the castle, at Alexander Ruthven's request, to confer with the earl regarding a debt. There seems to have been ill feeling at the time between the two, on account of the earl's father having been put to death by King James for treason, and the king also owed the earl a large sum of money. After dinner, on the evening of 5 Aug. 1600, Alexander Ruthven is said to have taken the king to a private study, while his brother, the earl, was engaged with other guests, and here James was confronted by an armed man, who was none other than G.'s servant, Henderson. Alexander Ruthven thereupon drew Henderson's dagger and presented it at the king's breast, threatening to kill him on the spot if he cried out for help, but that his life should be safe if he remained quiet. He then left King James in the custody of Henderson, who professed ignorance of any plot, and at the king's request opened one of the windows, when Alexander Ruthven returned, and on seeing the king about to call for help, struggled with him. James, however, managed to reach the window and cried out 'Treason!' to his followers below, who ran up the staircase to the king's help, led by John Ramsay, afterwards earl of Holderness. They found James struggling with Ruthven, whom Ramsay managed to wound and push down the stairway, where he was subsequently killed by other of the king's followers. G. then entered upon the scene, and seeing his brother's dead body rushed into the *melée* and was killed himself. The tragedy caused intense excitement throughout Scotland, and all the details of the investigation into the circumstances were reported to Elizabeth's ministers in England. The estates of the Ruthvens were confiscated, their name and honours abolished, and the house in which the strange event took place destroyed. Those politically hostile to James said that, with the help of the court, he invented the story of a plot by Queen Elizabeth in order to cover his own fault and his design to extirpate the Ruthven family. Some colour was given to the belief by the relentless severity with which James pursued the 2 younger and undoubtedly innocent brothers of the earl. They both fled to England at the time; but after the accession of James to the throne, one escaped abroad, while the other was imprisoned for 19 years in the Tower of London. The event is amongst the unsolved enigmas of hist. See A. Lang, *James VI and the Gowrie Mystery*, 1902.

Goyás, tn and port of Corrientes, NE. Argentina, on the Río Paraná. It was estab. in 1807 by Capt. G. It is served

by the Central, Entre Ríos, and NE. railways and is a distributing centre for agric. products and timber. G. has a tobacco research station. Pop. 22,000.

Goya y Lucientes, Francisco José de (1746-1828), Sp. painter, b. Fuendetodos in Aragon. He showed early promise and was a pupil in 1760 of José Luzán Martínez at Saragossa but because of some youthful escapade fled to Madrid and there worked for the painter Francisco Bayeu, whose daughter he married, 1773, after a short visit to Rome. By 1775, settled in Madrid, he began the celebrated designs for tapestry which



GOYA—SELF-PORTRAIT

Etching, 1803

occupied him for many years. In 1792 he became deaf as the result of a stroke, but was made court painter by Charles IV in 1799 and remained so under Ferdinand VII and the usurper Joseph Bonaparte. He lived in France from 1824 and d. at Bordeaux. One of the greatest painters, he excelled in profound and sometimes unsparing portraiture, like the 'Family of Charles IV (Prado)'; his single nude study, 'Maja desnuda' (Prado), is brilliant, while his depictions of human cruelty and the strange satiric inventions of his later years are of extraordinary power. 'The Caprices,' 1793-7, and the 'Disasters of War,' 1808-20, were inspired by the horrors attendant on the Fr. occupation. See lives by A. L. Meyer, 1923, and C. Poore, 1938; also *Goya: Drawings from the Prado* (introduced by A. Malraux), 1948.

Goyás, or **Goiás**, central state of Brazil, between Minas Geraes and Baía on the E. and Matto Grosso on the W., and traversed by the Tocantins and Araguaia, and the

high valleys of the Parnaíba-Paraná. Its climate is sub-tropical, and the soil is not very productive, though tobacco is exported. Cattle-grazing is extensively carried on, and gold, iron, diamonds, mica, and copper are mined. Neither of the rvs. between which the state lies is navigable, so the only outlet for the state is by means of mule trains until the railways are extended from São Paulo and Minas Geraes. The cap. is Goiânia (q.v.), a mining tn on the Rio Vermelho, and Anápolis is also an important distribution centre. Area 240,330 sq. m.; pop. 1,214,900.

Goyen, Jan van (1596-1656), Dutch painter, b. Leyden. He spent the greater part of his life at The Hague. He was one of the earliest of the Dutch landscape painters, and using very few colours effectively rendered light and shade over the Dutch stretches of flat land and water.

Gozo Island, or Gozzo (anct Gaulus), Brit. is. in the Mediterranean, 4 m. NW. of Malta (q.v.). The chief tn is Victoria, or Rabato (pop. 7000), in the centre. During the Second World War it suffered a serious loss in the 17th-cent. (Giant's) Gorgion Tower, with its many stone drop-houses, heraldic shields, and slender, domed staircase tower; this was demolished in the making of an airstrip. Area 26 sq. m.; pop. (including the small is. of Comino, S. of G.) 24,000.

Gozzi, Count Carlo (1720-1806), It. poet and dramatist, brother of Gasparo, b. Venice. He was a member of the *Accademia dei Granellieschi*, which was especially zealous to preserve the anct It. literature, and became famous for his wit by the pub. of his satirical poem *Tartana degli infussi per l'anno bisestile*, 1757, and his comedy *L'amore delle tre melarance*, 1761. This latter, which was acted by the Sacchi company of players, was very successful, and led to the production of a series of *fiabe*, fantastic plays based on fairy-tales. Of these the best example perhaps is *Turandot*, 1762, which was trans. by Schiller. G. also trans. Calderon's dramas, and pub. his autobiography, which is very amusing. His dramas, though praised by such eminent men as Goethe, Lessing, and Schlegel, have long since disappeared from the stage, although *Turandot* and *The Three Oranges* have come to life again in operas by Puccini and Prokofiev. See study, with bibliography, by B. Cestardo, 1932.

Gozzi, Count Gasparo (1713-86), It. poet and essayist, b. Venice, brother of Carlo. His works are remarkable for the purity of their language and the elegance of their diction. His *Sermon*, written in the style of Horace, is his best work in verse, and *Il Mondo morale*, an allegorical romance, shows the wonderful organisation of a philosophical mind. His version of Lucan, too, is remarkable, and his *Difesa di Dante* puts him in the first rank among commentators. He also acquired great reputation by the pub. of *Osservatore Veneziano*, 1761-2, a paper compiled in imitation of the *Spectator*. He was also

censor of the press in Venice for a considerable period. See G. de Beauville, *Gasparo Gozzi, giornalista venetian du XVIII^e siècle*, 1937.

Gozzo, see GOZO ISLAND.

Gozzoli, Benozzo (c. 1421-97), It. painter, b. Florence; his real name was Benozzo di Lese. He was an assistant of Fra Angelico, and is chiefly famous for his work in fresco. His largest and most important piece was begun in 1469, and took 16 years to accomplish. It consists of a series of 24 designs drawn from Bible hist. in the Campo Santo at Pisa (wrecked during the Second World War). His 'Rape of Helen' (National Gallery) has something of Fra Angelico's charm. See study by H. Stokes, 1906.

G.P.U. (Russian abbreviation for *State Political Administration*), name, 1922-34, of the security service in the U.S.S.R. Its functions and powers were essentially the same as those of its predecessor the Cheka (q.v.). During the N.E.P. (q.v.) period its activities were directed against the Church, 'socially alien' people, and former members of opposition parties, and in the following period of the first Five Year Plan (q.v.), and the collectivisation of agriculture (q.v.), against private *entrepreneurs* and traders, the old intelligentsia, and the 'kulaks' (see KULAK). The G.P.U. was also increasingly concerned with the internal party struggle. In 1934 it was renamed N.K.V.D. (q.v.). **Graaf Reinet**, tn in Cape Province, South Africa, about 58 m. from Middleburg. It is one of the oldest tns in the prov., and is noted for its gardens, vineyards, and choice fruit. It is also the terminus of one of the railway lines from Port Elizabeth. Mohair and merino wool are produced in the dist. Pop. (Whites) 4918; (Coloureds) 5779; (Bantu) 3361.

Grabbe, Christian Dietrich (1801-36), Ger. dramatist, b. Detmold. He studied law at the univ. of Leipzig, but soon abandoned this to devote himself to literary work. In 1822 he determined to become an actor, and wrote the drama *Herzog Theodor von Gothland*. This was not really successful, and G. went to the univ. of Berlin and passed his advocate's examination in 1824. He afterwards practised as a lawyer in Detmold. He is remarkable for his bold realism, and his dramas contain some very fine passages, but his work is marred by indelicacy. His best plays are *Don Juan und Faust*, 1829; *Friedrich Barbarossa*, 1829; *Heinrich VI.*, 1830; and *Napoleon, oder die Hundert Tage*, 1831, which places the battle of Waterloo upon the stage. See A. Bergmann, *Grabbes Begegnungen mit Zeitgenossen*, 1930.

Gracchus, name of a celebrated family of the gens Sempronius in anct. Rome.

1. *Tiberius Sempronius Gracchus* married Cornelia, daughter of Scipio Africanus the Elder. He was tribune in 185 BC; praetor in Hither Spain, 181; and twice consul, 177 and 163.

2. *Tiberius Sempronius Gracchus* (c. 163-133 BC), elder son of the above; quaestor in Spain, 137. As tribune of the

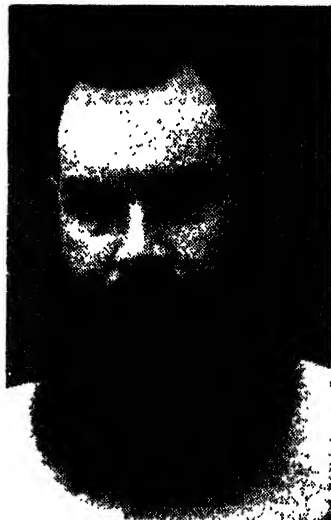
plebians in 133 he was moved by the deplorable condition of society, and brought forward an agrarian law providing that no person should own more than 500 jugera of land, except the father of 2 sons, who might hold an additional 250 jugera for each. The bill passed. At about this time also, Attalus III of Pergamum bequeathed his kingdom and all his property to the Rom. people. On the proposal of G. part of this legacy was divided among the poor, that they might buy farming implements, etc. While seeking re-election for the following year, G. was publicly assassinated by a mob of senators headed by P. Scipio Nasica.

3. *Gaius Sempronius Gracchus* (158-122 BC), brother of the last. After serving 2 years as consul in Sardinia, he was tribune of the plebians in 123 and 122, and in that capacity resumed his brother's policy of reform. He procured the exile of Popilius, the consul who had proceeded against his brother's followers, and proposed a law that all who had been deprived of any office by the people should in future be ineligible for any other office. By these measures he avenged the murder of Tiberius. He next struck at the power of the Senate by enacting that the *judices* should be chosen from the *equites*, not as before from the Senate, and that the Senate should decide the provs. which the consuls should have before their election. He also rearranged the whole taxation of the new prov. of Asia, and won over the Rom. mob by his corn law; by this enactment any citizen might every month buy of the State, at about half the cost price, sufficient corn for his own livelihood. To relieve the economic distress he renewed his brother's agrarian law and set on foot a scheme of colonisation, and he also proposed that the franchise should be given to all Lat. communities, and that the rest of Italy should receive Lat. rights. This last was most unpopular, and the Senate induced Livius Drusus, another tribune, to come forward with extravagant proposals in the people's interest, proposals which could not possibly be fulfilled. The plot was successful; G. failed to secure re-election for 121; a riot followed in the Forum, and he was slain with 3000 of his followers. He was a distinguished orator, and was the first of Rom. orators to employ violent action when speaking.

Grace, Edward Mills (1841-1911), cricketer, b. Downend, near Bristol, 3rd son of Dr Henry Mills G. and elder brother of 'W. G.' He too studied medicine. He played at Lords first in 1861, in Australia 1863-4, and in the first test match in England, 1880. He was a batsman, lob bowler, and a famous fielder at point. In 59 seasons he made more than 75,000 runs and took nearly 12,000 wickets. First secretary of Gloucester co. cricket club (1871-1909); 4 times married.

Grace, William Gilbert (1848-1915), cricketer, b. Downend, near Bristol. His father, a Gloucestershire doctor and enthusiastic cricketer, taught the game to his 5 sons and 4 daughters in the

orchard of their Downend home. His son, W. G. junior (d. 1905) was also a keen player. G. matured as a cricketer at an early age; he made his debut in first-class cricket in 1864 and was soon recognised as the best batsman in England. He took part in tours to North America and Australia. In his 44 seasons of first-class cricket he scored 54,896 runs, took 2876 wickets and made 126 centuries (highest score 344). His highest season's batting aggregate was 2739 in 1871, and his best bowling season 1875 with 191 wickets. In 1895 he became the first player to



W. G. GRACE

complete 100 centuries and to make 1000 runs in May. In 1880 he scored 152 in the first test match in England; he played his last test in 1899. With E. M. G. he virtually made the Gloucester co. cricket club, and was their captain from 1871 to 1899. In 1900 he formed the London co. cricket club. In 1879 and 1895 he received national testimonials realising more than £10,000. He studied medicine at St Bartholomew's Hospital, London, and in Edinburgh, and built up a large practice in Bristol. In youth a fine athlete, latterly he rode to hounds, went beagling, and played golf. Despite his domination of the cricket field he had great simplicity of character and was noted for his kindness to young people. No Englishman was better known.

Grace (Lat. *gratia*; Gk *charis*, favour). In Christian theology G. conveys the notion of a favour or benefit, freely bestowed by God, whose relations with the human race are distinguished into (1)

those in which He acts as creator and sustainer of the universe and mankind in particular; (2) those in which He bestows favours on us which are above our natural condition, and to which therefore we have no strict claim. It is to this latter class of God's benefits that G. refers. In the N.T. it refers particularly to the act of redemption performed by Christ, and to the application of that redemption to the individual. The precise manner in which it operates has been the subject of controversy among theologians. All agree on the necessity of G. for the salvation of man as laid down by St Paul, who combated the Jewish idea that salvation depended essentially on the observance of the Mosaic law. It is also generally granted by Catholic, Orthodox, and Anglican theologians that the first G., called sanctifying or *habitual G.* because it effects the regeneration of the soul, is conferred by baptism and the other sacraments. Those who have received this first G. are said to be in a state of G. In addition to this there is *actual G.*, i.e. those moral benefits and helps to perform good actions which a man receives in the course of his life from God. The explanation of how this actual G. concurs with the action of the free will has led to much controversy. At one extreme is the view of Pelagius (*anglice* Morgan, a native of Britain, c. 400), who held that without the aid of G. a man is perfectly able to fulfil the law of God; and that of the Semi-Pelagians, who taught that the first and last good actions or desires can be performed unaided by G. With the Reformers the tendency was in the other direction, and Calvin made salvation depend entirely on divine G., largely to the exclusion of the human will. The position of Jansenists was akin to this. Inside the Rom. Catholic Church these diverse tendencies were represented by a Dominican school headed by Baines and a Jesuit school founded by Molina. The general sense of the controversy may be gathered from the decision of the papal tribunal known as the *Congregatio de Auxiliis* (1598-1607), which decreed that Jesuits should not call Dominicans Calvinists and Dominicans should not call Jesuits Pelagians. But the concurrence of G. and free will remains among the thorniest questions in theology. It may be noted that the 'year of Grace' means the date measured from the birth of Christ or Incarnation understood as the fountain-head of all subsequent G.s. G. is also used as the name of prayer before and after meals (*Lat. gratiae*, plural, thanks). See I. Dörner, *System of Christian Doctrine*, iv, 1886; J. Terrien, *La Grace et la gloire* (2 vols.), 1897; van Noort, *De gratia Christi*, 1908; E. Brunner, *Die Mystik und das Wort*, 1924; E. Towers, *Actual Grace*, 1928, and *Sanctifying Grace*, 1930; and K. Barth, *Gottesgnadenschaft*, 1936.

Graces, see CHARITES.

Gracián, Baltasar (1601-58), Sp. writer, b. Belmonte. Little is known of his life, except that he was a Jesuit of Aragon. He is chiefly famous for having followed

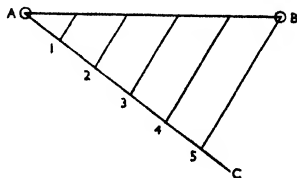
up the affected classicism which was popular in the 17th cent. under the name of Gongorism. His chief work was *El Criticón*, 1651-7, an allegory of human life, which has been compared with the *Pilgrim's Progress*. Most of his books were not pub. under his own name. Other works of his are *Agudeza, y arte de ingenio*, 1642, a manual of rhetoric; *El Héroe*, 1637, which describes the qualities of an ideal man; and *El Oráculo manual y arte de prudencia*, 1647, a system of rules for the conduct of life; trans. into Eng. anonymously as *Courtier's Manual Oracle*, 1684, and into German by Schopenhauer, 1862. See study by A. F. G. Bell, 1921; *The Oracle*, trans. and ed. by L. B. Walton, 1954.

Gradient of a railway is the rate at which it rises or falls above or below the horizontal, and is generally expressed in terms of the number of ft travelled to gain or lose 1 foot in height. The ruling G. of a section of railway is the steepest incline in that section, and is determined by the character of the country to be traversed, as well as by financial considerations. A moderate G. is 1 in 200, while 1 in 100 is heavy. The Great Western, when laid out by Brunel, had a G. of 1 in 1320 for a long distance out of London, but later engineers improved on this. The maximum G. possible depends on the climate, a dry one being most favourable; the limit is about 1 in 16.

Gradisca, It. tn, in Friuli-Venezia Giulia (q.v.), on the Isonzo, 7 m. SW. of Gorizia (q.v.). It forms an archbishopric with Gorizia. Pop. 5000. See FRIULI.

Gradual, book containing the plainsong music for the mass in the Rom. Catholic liturgy, but originally a response sung at mass between the Epistle and the Gospel.

Graduation: (1) the div. of a given straight line or arc into a given number of equal parts, or (2) the setting off of given units on a linear or circular scale. (1) A straight line, AB, may be divided into any



number of equal parts by setting out the number of arbitrary units on a line AC and drawing parallel lines through the div. points to AB. The accuracy is checked and the points corrected by spring dividers. An arc is divided by 'trial and error.' The bisecting of an arc or angle is done by geometric construction and checked by trial and error. The trisecting of an angle by geometric construction is one of the unsolved problems of geometry. (2) The G. of a scale in given units is now always done by

machine. In linear G. the 'work' or 'blank' is fixed on a carrier propelled in a straight line by a screw with a ratchet wheel at one end, the pawl of which turns the screw through a fraction of a revolution corresponding to a progressive motion of the carrier equal to the smallest unit to be used. The cutting tool is fixed independently on a slide at right angles to the screw and lowered for cutting the line when the blank is at rest in the correct position. With the dividing machine an accuracy of 0.0001 in. can be obtained. The most delicate G. is the ruling of a diffraction (q.v.) grating, where from 1000 to 30,000 grooves per in. must be cut on a metal surface with an accuracy of 10^{-4} in. A new method of producing such gratings, invented by Sir Thomas Merton, 1948, is now in use at the National Physical Laboratory. The grating is produced on a cylinder as very fine screw-threads by a continuous lathe-like motion. The helix is coated by a fine plastic skin which, after the cutting, is slit lengthwise and laid flat on moist gelatine, which hardens and produces a flat copy of the grating. In dividing a circular scale or arc into degrees, the blank is fixed concentrically on a large horizontal wheel, about 3 ft diameter, which is rotated by a tooth-worm drive. The tool is fixed independently and has only radial motion. A turn of the worm corresponds to 1 degree if the wheel has 360 teeth. The div. is made with an accuracy of within 1 sec. The accuracy of modern G. methods is of great importance in surveying and astronomy and, in fact, in all techniques dependent on exact measurement. Observations up to the time of Copernicus were only reliable to 4-5 min. Tycho Brahe's observations were accurate to 1 min.

Gradus ad Parnassum ('a step to Parnassus'), dictionary, either Lat. or Gk, in which the quantities of the vowels are marked. It contains synonyms and poetical expressions and extracts, and is most useful to students for verse composition. The first Lat. gradus was pub. in 1702, and was the work of the Jesuit Paul Ater.

Græco-Turkish War (1921-2). After the First World War Greece still cherished dreams of a Magna Græcia extending over a large part of Asia Minor; Turkey, on the other hand, refused to accept the section of the treaty of Sévres which mandated Smyrna to Greece. Both countries prepared for war. The Greeks eventually launched an offensive in Asia Minor in Mar. 1921, which was at first fairly successful. In April, however, the Greeks were defeated near Eskişehir and withdrew towards Ushak. The offensive was resumed from Ushak and Brusa in July, and on the 20th the Gk forces were back again in Eskişehir. The Turks made a strategic retreat to the Sakaria R., ostensibly to defend their new cap. Ankara; the Greeks continued to advance, but hesitation subsequently marked their further movement, and the Turks, turning on them in Sept., heavily defeated them.

The Greeks then retired on Eskişehir once again, and succeeded in repelling sev. Turkish attacks at Afion Karahissar in Oct. Winter having set in, the situation remained quiet for over 7 months, during which time Kemal completely reorganised the Turkish Army, and in July 1922 a general Turkish offensive was begun. Throughout Aug. and Sept. the Greeks were in headlong flight; Smyrna was evacuated by the Gk garrison in the latter month, and was then burned by the Turks (14 Sept.). Complications might have ensued at Chanak and Ismid with the Brit. forces under Sir Charles Harington (q.v.), but the Mudania Convention or armistice between Sir Charles Harington, for the Allies, and Kemal averted further war (Oct. 1922). Discussion between the Allies and Turkey were protracted, and it was not until 24 July 1923 that the treaty of Lausanne was signed, which, *inter alia*, recognised Turkey's right to Asia Minor. Much light is thrown on the pitch of demoralisation to which the Gk Army had fallen in 1921 by the hist., *Towards Disaster: the Greek Army in Asia Minor* in 1921, by Prince Andrew of Greece, 1930.

Graetz, Heinrich (1817-91), Ger. historian, b. Posen. He went to Breslau in 1842, where he met the leader of Jewish reform, Abraham Geiger, and was much opposed to his teaching. G. himself advocated freedom of thought, but did not see the necessity for freedom of ritual. He became famous by the pub. of his hist. of the Jews, 1853-74, which produced a greater sensation than any other Jewish book of the 19th cent.; and he was recognised as a master of Jewish hist.

Graevius, Johann Georg (1632-1703), Ger. classical scholar, b. Naumburg, Saxony. He was historiographer royal to William III. He pub. eds. of Cicero, Hesiod, Lucian, Suetonius, Catullus, and *Thesaurus antiquitatum Romanarum*, 1694-9, etc.

Graf, Arturo (1848-1913), It. poet and scholar, b. Athens, of a Ger. father and It. mother. In 1876 he became prof. of Romance literature in Turin. His most important collections of poetry are *Medusa*, 1880, *Le Danaidi*, 1897, *Morgana*, 1901, and *Poemeti drammatici*, 1905. His poems are serious and philosophical, often sombre in tone. His prose works include an important study of Foscolo, Manzoni, and Leopardi, 1898.

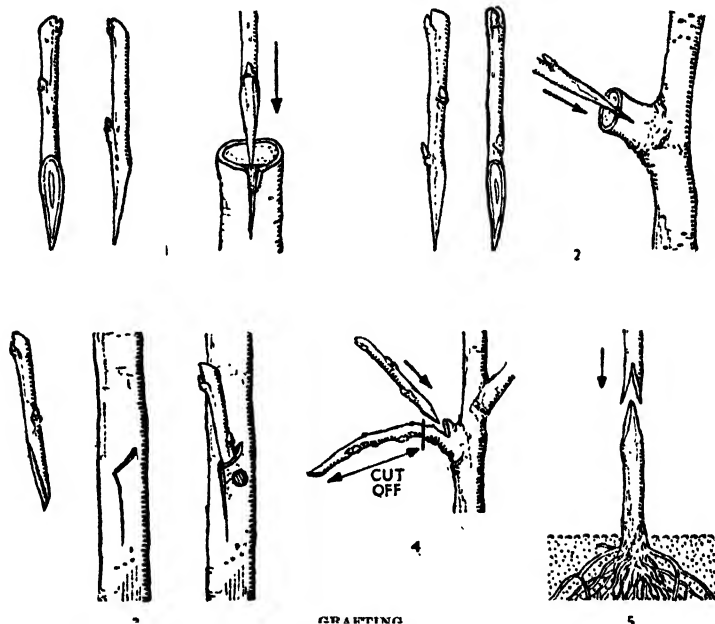
'Graf Spee, Admiral', see NAVAL OPERATIONS IN SECOND WORLD WAR.

Grafy, Charles (1862-1929), Amer. sculptor, b. Philadelphia, son of Charles G.; educ. at the Pennsylvania Academy of Fine Arts under Thomas Eakins and in Paris under Chapu and Dampé. He returned to Philadelphia. His works included portrait busts, also life-size and colossal figures, ideal figures and groups largely in bronze; e.g. 'Fountain of Man', Buffalo Exposition, 1901; 'Symbol of Life' (small bronze); 'Mauvais Pressage', Detroit Museum; 'Vulture of War', St Louis Museum; 'England' and 'France,'

New York Custom House; 'Gen. Reynolds,' Philadelphia.

Grafting, gardening technique of vegetative propagation whereby a portion (the scion) of one plant is caused to grow on a root system (the stock) of another, to build a composite individual plant. The scion may be a single bud, a piece of bark including a bud, or a shoot or twig. The stock may be a stump of main stem, a branch, or a whole tree. In all cases the

usually done in July-Aug. G. with shoots or slips is done in spring (Mar.-April) when sap is rising. Grafts should consist of hard, well-ripened shoots of 1-2-year-old wood, preferably 1 year, cut in Nov. and kept moist by being buried in a spade slit in a cool, shady part of the garden. The most popular methods of G. are: Rind G., where the stock is prepared by sawing and smoothing the branch, and marking a vertical slit in the bark into



1, rind (left, scion prepared; right, stock prepared); 2, cleft (scion and stock prepared); 3, bark; 4, stub; 5, saddle

essential point for success is to bring the inner bark tissues or green, slimy cambium layers of cells of the scion into intimate contact with those of the stock. G. is useful for various purposes, such as the rapid increase of varieties (e.g. roses), propagation of desired varieties on modifying stocks (e.g. fruit-trees), propagation of plant mutations or sports (e.g. fastigiate and weeping trees), imposing a desired variety upon an unwanted one, etc. The practice is old. Virgil discusses it in his *Eclogues*. The methods are many. To succeed, the plant parts to be grafted must be from closely related species of the same genus. Even then some varieties are incompatible and do not 'take' on the chosen stock. G. by budding (q.v.) is

which the freshly cut tapered end of the scion will fit snugly with cambiums in close contact. Cleft G., in which the stock is split and tapered scions fitted at each side into the split with their outer bark tissues coinciding with those of the stock. Bark G., where an angle of bark is lifted from the branch of the stock to admit a slender wedge-ended scion, fastened in place with a brad. Stub G., in which a side shoot on the stock is bent down and a cut made close to the junction of the shoot with a main branch, and into which a wedge-shaped scion is then pushed, the surplus end of the shoot being cut off. Saddle G., in which the stock is cut to a wedge and a scion of equal thickness is cut to cap it. Bridge G., chiefly used to

remedy bark damage, wherein scions are prepared at both ends to slip under living bark above and below the damaged area. Tongue, whip, and shoulder G.s are more elaborate methods of preparing stocks and scions to increase the area of contact and likelihood of success. By Approach G. or in-arching, the shoots of 2 plants growing in proximity can be brought together and united before the scion part is severed from its parent. This technique is useful to repair extensive bark damage to a cherished tree or to unite scions to stocks which cannot be easily grafted in the normal ways. Whatever method of G. is used, the united parts should be closely fastened together with raffia or adhesive tape and air excluded from the points of contact by smearing with G. wax of a mixture of fresh cow manure, finely chopped hay, and clay. By June or July the grafts will have taken hold and ties should be cut.

Grafting, Skin, see SKIN.

Grafton, Augustus Henry Fitzroy, 3rd Duke of (1735-1811), politician, a descendant of Charles II, educ. at Westminster and Cambridge. He entered Parliament in 1756, but his early promise was not fulfilled. First lord of the Treasury in Chatham's ministry of 1766, he became prime minister in the following year as the result of his leader's incapacity. But his conciliatory policy towards America was unpopular, and in 1770 he resigned.

Grafton, Richard (d. 1572), chronicler and printer, collaborated with Whitechurch in 1537 to produce a modified version of Coverdale's Bible, and in the following year departed to Paris in the company of Coverdale to print a revised version of the same work. But the Inquisition pronounced the book heretical, and G. was obliged precipitately to flee to England, where he completed his task in 1539. It was this 'Great Bible' that Henry VIII ordered to be set up in churches. In 1544 G. and Whitechurch obtained the monopoly for printing church service books, and at Edward VI's accession G. became king's printer. A number of the works he printed, including a continuation of Hardyng's *Chronicle*, 1543, and Hall's *Union of the Families of Lancaster and Yorke*, 1548, have come down to us, and also some of his original and contemporary commentaries.

Grafton, riv. port on both sides of the Clarence R., 342 m. NE. of Sydney by sea, and connected by rail with Brisbane, etc., in New South Wales, Australia. Sea-going vessels of moderate burden can reach the city. G. has both Anglican and Rom. Catholic cathedrals, and is commercially important as the centre of a fertile agric. country. Pop. of G. and S. G., 14,410.

Graham, name of an anct and famous Scottish family. The 'gallant Gramahs,' as they are styled in the ballads, were Anglo-Normans who settled in Scotland during the 12th cent. 'The hardy wight and wise' Sir John de G. of Dundaff was a boon companion of Wallace, and was slain in the battle of Falkirk, 1298. King

Robert Bruce rewarded the loyalty of Sir David G. by granting him the estate of Auld Montrose in exchange for Cardross, and it is from this estate that the title of earl of Montrose was taken, a title first conferred on Wm G. in 1504 as a recognition of his services at Sauchieburn, 1488. This Wm was one of the 'flower of Flodden' who fell with the king, his master. The great Montrose (see MONTROSE), who was the 5th earl and 1st marquess, was the grandson of a distinguished G. who had been lord chancellor, 1599, and viceroy of Scotland, whilst his own son was always called the 'good Montrose,' because of his gentle and peace-loving nature. The 4th marquess (d. 1742) was a staunch upholder of the Union. He was created a duke in 1707, and in George I's reign became secretary of state, 1717, and also chancellor of Glasgow Univ.

Graham, George (1673-1751), horologist; he was b. Kirkcaldy, or Riggs, Cumberland; went to London at an early age, and in 1688 became apprenticed to Henry Asho. He was admitted a Freeman of the Clockmakers Company on completing his indentures in 1695, and immediately entered the service of Tomplon (q.v.), to whose business he succeeded. If Tomplon was the father of the accurate watch G. performed a similar function for the accurate clock. He is buried in Westminster Abbey. See CLOCK.

Graham, Sir Gerald, V.C. (1831-99), Brit. general, entered the Royal Engineers in 1850. During the Crimean war his courage at the storming of the Redan won for him the Victoria Cross. In 1884, as commander in the E. Sudan, he was victorious at El Teb and Tamai, and the following year defeated the Arabs at Hashin and Tamai.

Graham, Harry Jocelyn Clive (1874-1936), humorous writer, b. London. Educ. at Eton and Sandhurst, he was in the Coldstream Guards in the Boer War and also served in the First World War. He is best known for his *Ruthless Rhymes for Heartless Homes*, 1899, pieces of mock frightfulness which started a fashion in children's verse; *More Ruthless Rhymes* appeared in 1930. Vols. of light verse are *Verse and Worse*, 1905, and *Departmental Ditties*, 1909. *The Perfect Gentleman*, 1912, and *The World We Laugh In*, 1924, are collections of prose articles.

Graham, Sir Hugh, see ATHOLSTAN, BARON.

Graham, James, see MONTROSE, MARQUESS OF.

Graham, John, Viscount Dundee, see DUNDEE, VISCOUNT.

Graham, Robert, afterwards Cunningham-Graham (c. 1735-c. 1797), poet, b. Gartmore, Stirlingshire. Educ. at Glasgow Univ., he went out to Jamaica and became receiver-general. In 1785 he was appointed rector of Glasgow Univ., and from 1794 to 1796 was M.P. for Stirlingshire. He was a keen Liberal and was an adherent of the principles of the Fr. Revolution. G. is chiefly remembered for his poem 'If doughty deeds my lady please.'

Graham, Robert (1786-1845), Scottish botanist; studied medicine at the Glasgow and Edinburgh Univs., and practised in the former tn. As a doctor he had great faith in the efficacy of drugs, such as opium and calomel, but he made his name as a botanical enthusiast, and occupied from 1820 till his death the regius professorship of that science in Glasgow and Edinburgh. His descriptions of newly discovered species appeared in the *Edinburgh New Philosophical Magazine*, etc., but it was in his supervision of the Edinburgh Botanic Garden that he made his influence most widely felt.

Graham, Robert Bontine Cunningham, see CUNNINGHAME GRAHAM.

Graham, Stephen (1884-). Brit. novelist and travel writer. For a time he worked as a clerk in the civil service. Going to Little Russia and Moscow he lived among students and peasants to study at first hand their conditions of life. In the First World War he served as a private in the Scots Guards, and wrote the much-discussed novel *Private in the Guards*, 1919, which purports to reflect the degrading influence of military discipline. His other pubs. include *A Vagabond in the Caucasus*, 1911; *Undiscovered Russia*, 1912; *With Poor Emigrants to America*, 1914; *Children of the Slaves*, 1920; *London Nights*, 1925; *The Gentle Art of Tramping*, 1927; *Stalin: an Impartial Study*, 1931; *Life of Ivan the Terrible*, 1932; *Boris Godunov*, 1933; *A Life of Alexander II*, *Tsar of Russia*, 1935; and *From War to War*, 1940.

Graham, Thomas (1748-1843), see LYNDOCK, LORD.

Graham, Thomas (1805-69), chemist, b. Glasgow, led an exceptionally full and busy life, and yet found time to follow up a number of most valuable and original researches in his chosen science, chem. From 1837 to 1855 he was prof. of chem. at Univ. College, London, having already held, for 7 years, a similar post at the Andersonian Institution of Glasgow. The most exacting of his public appointments, however, was his mastership of the mint, which he accepted in 1855 and retained till his death. It was G. who discovered the famous law of the diffusion of gases, and it was he also who estab. the polybasic nature of phosphoric acid and the formation with alcohol of certain definite salts, which he called alcoates, and which he observed were analogous to water-salts or hydrates. G. further examined the diffusibility of liquids, dividing them into crystalloids and colloids, the properties of the water of crystallisation of salts, and the passage of gases through small apertures, platinum disks, palladium, and indiarubber partitions, etc. Honours fell thick and fast upon him; his fellowship of the Royal Society dates from 1836, and he was first president both of the London Chemical (1841) and Cavendish (1846) Societies.

Graham, William Franklin ('Billy') (1918-), Amer. evangelist, b. near Charlotte, North Carolina. He conducted startlingly effective religious campaigns

in the U.S.A., Britain, and many countries of Europe in the 1950's (notably in the Harringay arena, London), and won considerable respect among both the clergy and the laity. His success was partly due to extremely efficient preparatory work (supported by prayer), the employment of modern Amer. techniques of publicity, and the effective use of massed choirs, soloists, of a team of dedicated helpers, and of 'counsellors.' G. called, in the traditional Protestant manner, for an immediate conversion, and a public declaration, then and there, for Christ, and thousands, young and old, who had never before bothered about religion, responded. There were also numerous re-dedications by convinced Christians. See also REVIVALS. See G.'s *Peace with God*, 1954.

Graham Land, Antarctica, icebound peninsula, included in the Brit. crown colony of the Falkland Is. It is almost completely destitute of plant life. An expedition of research under the explorer Rymill (q.v.) went out to the area in 1934-7, although whalers, sealers, and others had previously visited the peninsula and is. The first detailed survey has been undertaken and pub. by the Falkland Is. Dependencies Survey (q.v.); bigger scale maps, from aerial survey, are in production. See J. Rymill, *Southern Lights*, 1938.

Grahame, Kenneth (1859-1932), novelist and writer, b. Edinburgh. Educ. at St Edward's School, Oxford, he was a secretary in the Bank of England, 1898-1908. In 1890 he pub. a satirical story, *The Headsman*. *The Golden Age*, 1895, and *Dream Days*, 1898, delightful studies of childhood, achieved much popularity, but he is more famed for *The Wind in the Willows*, 1908, a story of animals treated as human beings, as popular with adults as with children, for whom it was written. A. A. Milne dramatised it in 1930 as *Toad of Toad Hall*. See life by P. R. Chalmers, 1933.

Grahame-White, Claude (1879-), aviator. In 1910 he opened an aviation school at Pau, France, and also won the Gordon Bennett trophy. Later in the same year he estab. his works and school of flying at the London aerodrome, Hendon. G.-W. was one of the most popular aviators of pre-war days and did much to make the Brit. nation air-minded. This work he continued in many books.

Graham's Dyke, or **Grim's Dyke**, see ANTONINE WALL.

Grahamstown, cap. of the dist. of Albany, 107 m. N.E. by rail of Port Elizabeth, on the railway to Kimberley, in the E. of Cape Province, South Africa. It lies 28 m. from the coast and stands 1745 ft above sea-level in a healthy and pleasant situation, and was named after Col. Graham, who, in 1812, defended the region from the Kaffir invasions. It is one of the prin. educational centres in the Union of South Africa, and Rhodes Univ. College represents an active intellectual life. There is a training college for

women teachers. There are Rom. Catholic and Anglican cathedrals. G. is the centre of a large agric. area. Pop. 23,000.

Graian Alps, range of the W. Alps, forming a boundary between Piedmont and Savoy, reaching northward to the Col de la Seigne. The highest summit, Gran Paradiso (13,320 ft), rises S. of Aosta in Italy.

Grail, Holy (probably from Low Lat. *gradalus*, a kind of vase, or from Modern Lat. *crater*, *craella*, a bowl), vessel from which Christ drank at the Last Supper and 'wherein the precious blood of the Saviour was received, on the day that He was put on rood and crucified,' by Joseph of Arimathea, in whose family the sacred vessel was religiously preserved. According to legend the G. was taken by Joseph, or his descendants, to Britain. It possessed mystic properties, being able to multiply bread, to feed those who were free from sin, to strike blind by its effulgence all those who, not being pure, yet looked upon it, or to strike them with dumbness. The stories of the miracles which occurred in its presence, and of its quest, after its mysterious disappearance, throughout Christendom, abound in the romances of chivalry of the Middle Ages. Most of them have their origin in the Anglo-Norman romances, oral or written, belonging to the Arthurian cycle. The G. first appears bound up with the story of *Perceval le Galois*, or *Peredur*, as he is called in Welsh. *Perceval* had been brought up by his widowed mother in complete ignorance of chivalry, but by accident he sees some knights in armour, whereupon he becomes a knight-errant, and goes to the court of the Fisher King, then the guardian of the H. G. He sees the sacred vessel but fails to put some mysterious question; great trouble ensues, and the G. disappears. Later Galahad plays the most important part in its quest. He, *Perceval*, and *Bors* are the only knights to whom a vision of the G. was vouchsafed. The following are the sources of the G. legend: (1) the incomplete *Conte del Graal*, written by Chrétien de Troyes (d. c. 1195); (2) the *Parzival* of the Ger. Wolfram von Eschenbach (c. 1210), founded upon the former, and continuing it; (3) the trilogy *Joseph d'Arimathe*, *Merlin*, *Perceval* of the franc-comtois poet, Robert de Boron, who attached the legend to the Breton cycle about the beginning of the 13th cent.; (4) the *Quête du Saint-Grail*, of unknown authorship, but attributed in a later form to Gautier Map; (5) the *Saint-Grail* (c. 1230), in prose founded on Boron's poems; (6) the *Mabinogi of Peredur*, a Welsh prose version of the 14th cent.; and (7) *Sir Perceval of Galles* (c. 1440), an Eng. poem. The story began to be popular in England with the printing by Caxton in 1485 of Malory's *Morte d'Arthur*, founded on the *Quête du Saint-Grail*, and Tennyson, in the 19th cent., created widespread enthusiasm for the romances of the Arthurian cycle in his *Idylls of the King*. Wagner's *Parsifal* draws its inspiration from the same source. See Newell, *King*

Arthur and the Round Table, Boston, 1897; Jessie Weston, *Legend of Sir Perceval*, vol. xvii, 1906; *From Ritual to Romance*, 1920; J. D. Bruce, *The Evolution of Arthurian Romance*, 1923; R. S. Loomis, *The High History of the Holy Grail*, 1898 (Everyman's Library); *Celtic Myth and Arthurian Romance*, 1927; and F. Rolt-Wheeler, *Mystic Gleams from the Holy Grail*, 1949.

Grain (weight), see METROLOGY.

Grainger, Percy Aldridge (b. 1882), Australian pianist and composer, b. Melbourne. From 1915 he lived mostly in the U.S.A., of which he is now a citizen. He studied under Busoni and was an intimate friend of Grieg, of whose concerto he became a famous interpreter. As a composer and pianist G. introduced many of his own works in London and in America, and also did much to spread the works of Debussy, Ravel, Albéniz, and other modern composers. In the *Journal of the Folk-Song Society* (May 1908, No. 12) he pub. a collection of Brit. folk-tunes which have become the bases of many of his compositions. Works: *Molly on the Shore*, *Shepherd's Hay*, *Irish Tune from County Derry*, *Hill Songs*, *Marching Song of Democracy*, *Sir Eglamore*, *Brigg Fair*, *Morning Song on the Jungle*, and many settings from Kipling's *Jungle Book*, all for various combinations. See study by D. C. Parker, 1918.

Graining, variety of dace found in the Mersey.

Gram, see CHICK-PEA.

Gram (weight), see METROLOGY.

Gramineae, family of 8000-10,000 monocotyledonous plants containing grasses, characterised by having leaves which are alternate and usually linear, with a long split sheath enclosing the stem; the nodes are prominent, the internodes long and hollow. The flowers, often unisexual, have no perianth, but are enclosed by bracts, termed paleae, and are arranged in complicated inflorescences. Genera include *Agrostis*, *Alopecurus*, *Ammophila*, *Andropogon*, *Anthoxanthum*, *Arundinacea*, *Arundo*, *Bambusa*, *Bromus*, *Coix*, *Cortaderia*, *Elymus*, *Festuca*, *Glyceria*, *Briza*, *Gynerium*, *Holcus*, *Hordeum*, *Lamarckia*, *Oryza*, *Panicum*, *Phragmites*, *Phyllostachys*, *Poa*, *Saccharum*, *Sorghum*, *Stipa*, *Triticum*, *Zea*.

Grammar (Gk *gramma*, letter) treats of the usage of a word and of combinations of words in a language. It is an exposition of, or a treatise on, a language as it is customarily spoken among a particular people. Its function is to teach what is, not what ought to be, spoken. The first G.s were written by the Sophists of ancient Greece, who studied the G. of their language primarily for the purpose of discovering the rules that govern the art of rhetoric. They first distinguished between the noun (*onoma*) and the verb (*rhema*), which together form the basis of the G. of every language. Protagoras made a further advance upon the study of the language by marking the distinction between the 3 genders, masculine, feminine, and neuter, and between the

various verbal moods. It was Aristotle who introduced the word *ptôsis*, case, using it to denote any flexion whatever. Later the Stoics confined case to nouns. Thus the elements of G. were set forth and parts of speech defined.

The second impetus given to the study of G. was due to the desire to study a language unintelligible except with the aid of glosses and vocabularies. During the 2nd cent. BC Alexandria was the literary centre of Greece. In that time there fl. many scholars, but there was a lack of any creative original talent. The Alexandrians consequently applied themselves to the study of the great poets of an earlier time. The Gk language having changed in certain ways during the intervening centuries, the language had to be studied in order that the poetry might be understood. Thus there grew up in Alexandria various schools of grammarians, who studied the language of ancient Greece. Among these were Zenodotus, a native of Ephesus, the superintendent of the great library, Alexander the Aetolian, and Lycophron the Chalcedonian, who were employed by Ptolemy Philadelphus about 200 BC to revise the Gk poets. Later there were 2 distinct schools of grammarians, known as the Analogists and the Anomalists. The former was founded by Aristarchus of Samothrace (c. 220-144 BC), a pupil of Aristophanes of Byzantium. This school upheld the law of analogy between the idea and the word, whereas the Anomalist denied the existence of rules except in so far as they were proved by custom and practice. Among the latter were numbered Crates of Mallus in Cilicia, who founded the famous school of G. at Pergamus. He pub. a commentary on Homer in opposition to the ed. of Aristarchus. His was the first formal Gk G. In the following century the Romans used the Gk G.s of the Alexandrians; then, in comparing their own language, Lat., with Greek, they came to write Lat. G.s. The Lat. G. books were modelled on that of Dionysius Thrax, an Analogist. The Romans were obliged to modify and to enlarge upon existing definitions, to suit their language. For example, a Lat. noun has one more case than a Gk noun, namely, the ablative case, which was first defined by Julius Caesar in his *De Analogia*. The most famous grammarian of later Rome was Donatus, the teacher of St Jerome. He lived in the 4th cent. AD. The treatise formerly attributed to him on Lat. G. has formed the basis of most books on that subject, from his own time up to the present day.

Formal Grammar comprises morphology and syntax. Morphology treats of the forms of a language, the modifications of such forms, and the treatment of inflections, etc. In order to classify different branches of linguistic knowledge, definite nomenclature is indispensable, but has always been variable; continental grammarians are continually proposing new sets of names for even the parts of speech. Most of the common names used in Eng.

G. books are derived through the Lat. from the Gk, the Rom. grammarians using, translating, or mistranslating the Gk names as they found them in Alexandrian G. books. Morphology also deals with the various parts of speech, which, according to most Eng. grammarians, are 8 in number: noun or substantive, pronoun, adjective, verb or predicate, adverb, preposition, conjunction, and interjection; and with the classifications and inflections of these. Many grammarians do not recognise the interjection as belonging to the so-called parts of speech, arguing that it can form no part of a sentence, and is nothing more than an articulated gesture. Morphology is closely related to etymology and phonology, for the classification and analysis of a word depend largely upon its stem and its form. They are also connected with accentuation and orthography in so far as the grammatical meaning of words is affected by a change of accent or of spelling, as, for example, in *incline* (noun) and *inclîne* (verb), and *practice* (noun) and *practise* (verb). Morphology treats of the form and structure of single words, whereas syntax treats of words in relation to other words, that is, of the arrangement of words into sentences according to the established usages of a language. Syntax is generally similar in languages belonging to the same family, though each has, of course, its own idiom. In an inflectional language like Lat. less depends on the arrangement of words as their meaning is made clear by the inflectional endings. In a uninflectional language like Eng. there must exist certain laws of position, which show the meaning of a word. For example, the word *sleep* might denote an action or a state, that is to say, it might be a verb or a noun; its meaning is made clear by its relation in a sentence to other words. Eng. syntax is usually taught in schools by means of analysing and parsing. Analysis is the differentiation of types of sentences and the resolution of a sentence, whether 'simple' or 'compound,' into its component parts, whereas parsing is assigning each word in the sentence to its class as a part of speech and showing its syntactical relation towards other words in the sentence.

The rules of G. depend upon the common practices of people, and, if these practices change, the rules become modified by the consent of the majority. The rules of Mod. E. G. are very different from the rules of O.E. G. By a continuous process of monophthongisation, Eng. has ceased to be an inflectional language. But in order to understand fully the G. of Mod. E., the grammarian must study the change and development of O.E. through M.E. into Mod. E. Moreover, a language has, in a sense, as many G.s as it has dialects. O.E. had various forms, W. Saxon, Mercian, Kentish, Northumbrian, etc., the influence of the court of Alfred making W. Saxon the chief literary form. In the Middle Ages the chief dialects were E. Midland, W. Midland, N. Kentish, and SW. Through the influence of the works

of Chaucer, Eng., as now spoken and written by educ. men, is a development of E. Midland. This particular dialect of Eng. has become prevalent among Eng.-speaking people all over the world, and by Eng. G. in common parlance we mean an exposition of that language as it is used by educ. people. But, nevertheless, the dialects of M.E. still exist in a modified form among the more unsophisticated inhab. of Scotland, Lancs, Somersetshire, etc. The vocabulary, use of forms of speech, and construction of sentences differ in different cos. What is grammatical to an Irish peasant would be unintelligible to a Cornish fisherman. When G. treats of the different usages of a language in different places and at different periods of time, it is known as *historical G.* Historical G. can be studied only by consulting older records and inscriptions. The G. of a language can be traced only as far back as documentary evidence permits, and can be continuous only in a language where a succession of written records exists. The grammarian may, however, reconstruct one language by comparing its forms with those of cognate languages. Thus by comparing O.E. with Gothic and Old High German, and these in turn with Lat. and Gk, he would obtain some idea of the hypothetical forms of Primitive and Indo-Germanic, from which those languages are derived. This is known as the comparative method, and the system which regards one language in relation with other languages of the same family is known as *comparative G.* The object of *universal G.*, which has been called the 'metaphysics of language,' is, by comparing the G.s of different families or groups of languages, to arrive at some knowledge of the ideas that underlie all G.

See E. Mätzner, *English Grammar*, trans. 1874; A. Schleicher, *Compendium of the Comparative Grammar of the Indo-European Languages*, trans. 1874; H. Sweet, *Words, Logic, and Grammar*, 1875-6, and *A New English Grammar, Logical and Historical* (2 vols.), 1892-8; D. Pezzi, *Aryan Philology according to the Most Recent Researches*, trans. 1879; A. H. Sayce, *Introduction to the Science of Language*, 1879; F. Mauthner, *Beiträge zur einer Kritik der Sprache*, 1886-1900; H. Delbrück, *Comparative Grammar of the Indo-Germanic Languages*, trans. 1888-95; C. Abel, *Ägyptisch-indoeuropäische Sprachverwandtschaft*, 1903; T. G. Tucker, *Introduction to a Natural History of Language*, 1908; O. Jespersen, *Philosophy of Grammar*, 1924; S. A. Leonard, *The Doctrine of Correctness in English Usage*, 1929; L. Bloomfield, *Language*, 1935; I. R. Palmer, *An Introduction to Modern Linguistics*, 1936; E. Prokosch, *A Comparative Germanic Grammar*, 1939; and O. Jespersen, *A Modern English Grammar*, 1946. See also under *Language* and *Literature* section of various countries.

Grammaticus, see **SAXO**.

Gramme, or **Gram**, see **METROLOGY**.

Grammichele, tn in Sicily (q.v.), built on the slope of a hill, 32 m. SW. of

Catania (q.v.). Beautiful marble is found in the neighbourhood. Pop. 15,000.

Grammont, see **GEERAARDBERG**.

Gramophone (in America 'phonograph'; historically sometimes 'graphophone'; currently, often simply 'reproducer'). The beginnings of sound recording and reproduction can be traced back to 1859, when Leon Scott demonstrated his 'Phonautograph' to the Royal Association. For centuries men had suspected that sound was a form of energy, although no one so far had succeeded in proving it. Scott's 'Phonautograph' produced the proof. By placing a small diaphragm at the end of a funnel, and attaching to the former a stiff bristle which in its turn rested lightly on a revolving cylinder coated with lamp-black, Scott found that not only did the bristle 'draw' patterns on the revolving cylinder when sound was directed into the funnel, but also that similar sounds produced similar patterns. Thus were the basic laws originally demonstrated and directly observed. Scott regarded the evidence of the 'Phonautograph' as purely theoretical, as an advancement of knowledge with no particular practical use in view. Application of the knowledge came in 1877 when Thomas Edison saw the possibility of cutting a permanent imprint of the forms of sound waves in such a way that by reversing the process the resulting 'record' could be 'played back.' Edison cut his records on to a cylindrical drum covered in tinfoil, with the imprint of the patterns made vertically (or 'hill and dale'). Later on C. S. Tainter and A. G. and C. Bell replaced Edison's tinfoil covering with a more durable and efficient one of wax.

Edison is generally credited with the invention of the G. or phonograph. But this is not historically accurate; Edison was really working on a different line altogether, and it is to the pioneer work of Emile Berliner, a Ger. emigrant living in Washington, that the G. as we know it to-day owes its existence. Berliner's prin. achievement extended in 3 complementary directions. Firstly, he abandoned Edison's cylinder with its 'hill and dale' cut in favour of a flat disc with a lateral cut groove, thus combining Scott's 'writing in sound' with Edison's permanent imprint; secondly, he developed an adequate machine for reproducing the discs; and thirdly, he discovered a method for duplicating them. Berliner's first records were 5-in. discs with the grooves etched on glass. For these there was no way of duplication. But soon this energetic inventor progressed to recording on zinc, and thence to an electro-deposition process for the production of a 'master' (1888).

For some years there was fierce rivalry between the relative merits of disc and cylinder recordings, for Edison had seen the possibilities opened up by Berliner and had adapted his own process accordingly. However, it was not long before Berliner's system carried the day because of its inherent technical advantages; and

when that happened the G. was thoroughly set on its road to world-wide prosperity.

The early G.s and phonographs were entirely mechanical, or acoustical—that is, the processes both of recording and of reproduction were dependent on the direct action of sound waves on diaphragms of one sort or another. Then, in 1925, came the next great advance—*electrical recording*, made possible by the invention of the thermionic valve and the microphone. It was now possible to convert the electrical impulses set up in the microphone by the impact of sound waves in such a way that they would animate the recording cutter. And when, 2 years later (1927), electrical reproduction was added to electrical recording the entire process was freed from the inescapable limitations and inflexibilities of the old acoustic techniques. The principal advantages of electrical recording and reproduction were greatly increased fidelity due to greater sensitivity throughout the whole chain of operations, a far more flexible control, and an enlarged scope due to the portability of electrical equipment, which in its turn meant that no longer was recording altogether confined to the studio.

The enormous improvement in quality brought about by the introduction of electrical recording (which ousted the old methods in about 3 months) was a decisive factor in establishing the G. as a serious machine for the reproduction of music. Hitherto, only the human voice could be recorded with any degree of acceptable fidelity, a circumstance which undoubtedly accounts for the immense popularity of operatic and other vocal records during the early days of the G. Now, however, all that was changed, and, if not the whole of the audible frequency spectrum, then at least a substantial part of it, could be faithfully recorded and reproduced and internal balance and perspective adequately controlled.

The apparatus required for the electrical reproduction of G. records could from the beginning be broken down into 3 sections—the amplifier, the motor and pickup, and the loudspeaker. Despite tremendous advances the basic requirements remain the same to-day. The process is as follows: a record is placed on a turntable which will revolve accurately at the correct speed; the needle, or stylus, in the pickup head is lowered on to the record groove. The passage of the point over the groove (the imprints are on the sides of the groove, not on the bottom) causes it to vibrate, and these vibrations are converted into electrical impulses in the pickup movement, and are then passed in that form to the amplifier. The amplifier amplifies (i.e. makes larger) electrical signals—it does not amplify sound as such—and then passes them to the loudspeaker which in its turn reconverts them into the sound waves which we hear in our own rooms. The quality of the reproduction depends entirely on the faithfulness with which

each component in the chain does its work—if any part is inadequate in performance or faulty in design the sound which emerges will be to a greater or lesser extent distorted. And because no machine is absolutely perfect and infallible, some degree of distortion or falsification is inevitable, although to-day such shortcomings have been reduced to a minimum.

In the years between the invention of electrical recording and reproduction and the outbreak of the Second World War in 1939 the emphasis was on the refinement and development of existing techniques. Steady improvements in amplifier circuits, in pickup design, and, perhaps most important of all, the improvement in loudspeakers which came with the invention of the moving-coil units, resulted in a progressive advance in quality. This was the era of the radiogram—a machine in which an electric G. and a radio receiver were joined together in one well-designed and convenient machine. Although a few people still preferred, for personal reasons (or because they either could not afford electrical equipment or lived where there was no supply of electricity), the old acoustical G.s, and still fewer explored the possibility of specially built independent G.s, it was the radiogram that was the primary medium of record reproduction. In 1930 the automatic record-changer made its appearance, enabling records pressed in 'automatic couplings' (or a selection of shorter pieces) to be played straight through without the need for manual operation. These and other ingenuities combined to give the radiogram its universal popularity.

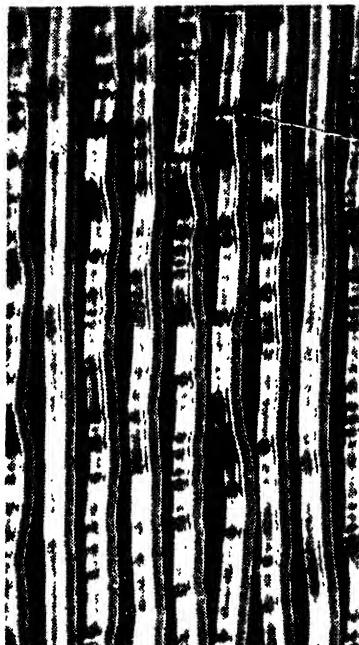
The period of the war saw the end of the manu. of radiograms and G.s (though not of records): but after it was over much of the scientific knowledge and experience gained under urgent national necessity were again turned to peaceful applications, among them recording and reproduction. A startling new degree of realism was achieved with the post-war introduction of Decca's 'FFRR' (full frequency range recording) and H.M.V.'s (His Master's Voice) 'T.T.' (transient true) techniques. And soon the means of reproduction began to catch up with the capabilities of the new records.

Then, originally from America where it had been pioneered by Columbia, came the long-playing record. This was not so much revolution as evolution, for at bottom the system of recording and reproduction remained theoretically the same. The great advantage of long play was that it gave superior quality allied to an enormously increased playing time. This latter was achieved by reducing both the groove size and the speed of revolution, so that nowadays up to half an hr (occasionally more) of music or speech can be safely accommodated on one side of a 12-in. record. This, of course, removed at a blow the one remaining serious objection of the musician to the G.—namely the arbitrary breaking up of

music into 4- to 5-min. periods. Also, along with the increased playing time and the improved quality, by pressing records on plastic instead of the old shellac compound completely silent surfaces could be achieved, eliminating at last the persistent irritation of needle scratch. With the increased frequency range of modern records it was entirely necessary

but it was eventually brought to a peaceful solution, and by the time long play reached Great Britain, in the summer of 1950, playing speeds had more or less settled down into an accepted pattern. 33 $\frac{1}{3}$ became the standard record speed for all long works or 'recitals' (either 10-in. or 12-in.), while the 45's were issued for short pieces on their own or for extracts from their larger brothers. Each had a place to fill and each filled it.

Nowadays all original recordings are made on magnetic tape. Tape has definite advantages over disc for recording purposes, and soon ousted the latter from the laboratories. From the original master tapes it is possible to make both



Courtesy Electric and Musical Industries, Ltd.

PHOTOMICROGRAPH OF TYPICAL 78 r.p.m. RECORD GROOVES ENLARGED APPROXIMATELY 20 TIMES. 95 GROOVES PER INCH

to get rid of the old scratch and hiss, which became more prominent as the range increased. Luckily, with the introduction of plastics (vinyl or geon), this was satisfactorily achieved.

Until the advent of the long-playing record, the standard speed of revolution had settled down to a universally accepted 78 r.p.m. The long-playing record reduced this to 33 $\frac{1}{3}$ r.p.m. However, with the long-play disc came also another innovation—a smaller (7-in.) record revolving at 45 r.p.m., introduced first by RCA Victor as a counter attraction to Columbia's long-playing record. At first, in America, a battle of speeds threatened to put the whole industry in a turmoil;



Courtesy Electric and Musical Industries, Ltd.

PHOTOMICROGRAPH OF TYPICAL 33 $\frac{1}{3}$ r.p.m. LONG-PLAY RECORD GROOVES ENLARGED APPROXIMATELY 25 TIMES. 240 GROOVES PER INCH

tape copies and, by a complex but quite straightforward process, disc matrices from which records can be pressed. In addition tape lends itself readily to editing, reduces inherent distortion, and is a more generally manageable medium for recording purposes. The introduction of tape recording led, in 1954, to the marketing by the Electric and Musical

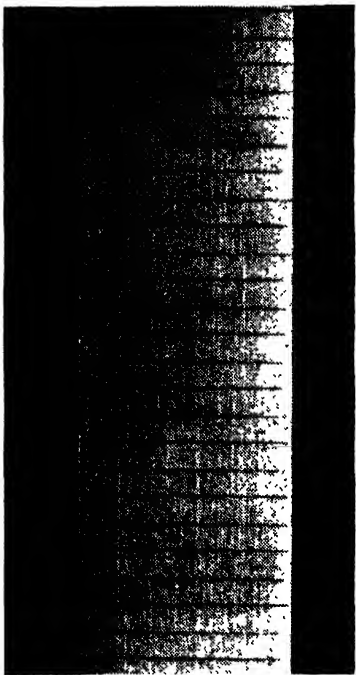
Industries organisation of *tape records* to complement discs. Tape records have definite advantages over disc, if also one or two minor disadvantages. The advantages are concerned mostly with still greater silence of background, elimination of end-of-side distortion, and lack of susceptibility to physical damage. Tape passes the replay head at a uniform speed ($7\frac{1}{2}$ in. per sec.) throughout its entire length, unlike the disc which presents the stylus point with a progressive decrease in linear speed as it approaches the centre, a fact which accounts for the frequent deterioration in quality at the end of long or heavily modulated sides.

In 1955 came a further advance, with the introduction, also by Electric and Musical Industries, of *Stereosonic Tape Records*. The ideal of stereophonic reproduction is by no means new (experiments were made in the Paris Opera House as long ago as 1881); but only since the development of contemporary techniques has it become a commercially practical proposition. However, much research has been done, and is being done, on the problem of perfecting stereophonic discs, and it seems as though they may yet offer the most practical solution. In stereophonic reproduction it is necessary to convert the outputs of 2 microphones into 2 different sorts of outputs with carefully calculated amplitude differences for feeding 2 independent loudspeakers via a pair of matched amplifiers. The result is roughly, though not exactly, analogous to 3-D in the cinema—another dimension is added to the reproduced sound with a consequent gain in fidelity and naturalness of perspective. It seems likely that stereophonic reproduction will make rapid progress, even if it does not soon conquer the field of recorded music altogether.

As soon as records began to change in type and increase in quality the means of reproducing them also changed. The radiogram, or commercially built and marketed reproducer, rapidly yielded ground among enthusiasts to the privately assembled machine. Instead of buying a reproducer complete, it is now more usual to buy an amplifier, a pickup, a motor, and a loudspeaker separately, and frequently from different manufacturers, and then to assemble them conveniently in the home. Thus a greater freedom of choice became available, and only thus could full justice be done to the new recording techniques. The growth of this practice ushered in the current age of *High Fidelity* (or 'hi-fi'). Strictly speaking, all 'hi-fi' means is the greatest possible degree of faithfulness to the original sound; in practice it has come to be the general term covering the use of all the advanced techniques now available to the public throughout the world. An indication of the popular interest now shown in 'hi-fi' was given by the success of the first European *Audio Fair*, held in London in April 1956, succeeded by a second in 1957, and a third in 1958.

Originally the word 'gramophone' was

a protected trade name, the sole rights being held by the Gramophones Co. Ltd. ('His Master's Voice') until 1905. However, it has now become a part of the language and is still the most familiar term describing a machine for the reproduction of records. The literature devoted to the whole subject is nowadays a copious one. Among books currently



Courtesy Electric and Musical Industries, Ltd.

EXPERIMENTAL PHOTOGRAPH OF AN ATTEMPT TO RENDER IN PICTORIAL TERMS THE PRINCIPLE INVOLVED IN MAGNETIC TAPE RECORDING

available the following may be consulted: J. Moir, *High Quality Sound Reproduction*, 1955; R. Gelatt, *The Fabulous Phonograph*, 1955; R. E. B. Hickman, *Magnetic Recording Handbook*, 1956; P. Wilson, *Gramophone Handbook*, 1957; Burnett James, *Hi-Fi. For Pleasure*, 1957; M. Henslow, *Hi-Fi Yearbook*, 1957.

Grampians: 1. Mt chain composed of granite, gneiss, quartzite, marble, and schists, which extends from SW. to NE. across Scotland, from Loch Gail (S. Argyll) to Aberdeenshire. The Cairngorms (q.v.) form a N. branch. Well-known summits are Ben Nevis (4406 ft),

Ben Macdhui (4296 ft), Ben Alder (3757 ft), and Ben Lomond (3192 ft). The chief rivs. flowing from the watershed N. are the Spey, Don, and Dee, whilst those flowing S. are the Esk, Tay, and Forth. In general aspect these mts are wild, rocky, and heather-covered. Their S. slopes form the 'Highland Line.'

2. Another range lies in Victoria, Australia, partly skirting the basin of the Glenelg and its trib. streams; the chief peak is the height of Mt William.

Grampus, see KILLER-WHALE.

Gran, see ESZTERGOM.

Gran Canaria, one of the chief Canary Is., in the prov. of Las Palmas (q.v.). It is of volcanic origin and its peaks reach 6500 ft. It has many deep valleys, and is fertile. The cap. is Las Palmas (q.v.). Area 592 sq. m.; pop. 301,000.

Gran Chaco (from Sp. 'great hunting ground'), vast lowland plain of approximately 250,000 sq. m. in the centre of South America, occupying the ters. of E. Bolivia, W. Paraguay, and part of the N. Argentine rep. It may be roughly divided into 3 dists. The Chaco Boreal, belonging very largely to Paraguay (the N. and W. fringes only being Bolivian), extends from the plains of Chiquitis to the Pilcomayo (bird riv.), and consists of giant forests. The Chaco Central (Argentine) lies between the 2 rivs., the Pilcomayo and the Bermejo (red riv.). The third dist., the Chaco Austral (also Argentine), lies between the Bermejo and Salado R.s. The whole region is inundated at times to so great an extent that it presents the appearance of one vast lagoon. Indians are the chief inhab. See also CHACO WAR.

Gran Paradiso, see COGNÉ; GRAIAN ALPS. **Gran Sasso D'Italia**, highest mt group in the Apennines (q.v.), in Abruzzi e Molise (q.v.), Italy. Here, in the Hotel Campo Imperatore, some 6000 ft above sea-level, Mussolini (q.v.) was imprisoned after the fall of the Fascist regime in 1943, until rescued by a Ger. force. The highest point is Monte Corno (9584 ft).

Granada, **Luis de** (1505-88), Sp. preacher of humble extraction. b. Granada. His mother became widowed when he was only a child, and was assisted by the Dominicans. The boy received a good education, and after a period as page to the alcaide took vows at the Dominican convent of Santa Cruz at Granada. He was later on appointed procurator at Granada, and then at the end of 7 years he became prior of the convent of Scala Caeli in Córdoba. He acquired great fame as a preacher, and was ultimately appointed confessor and counsellor to Catherine the queen regent. He wrote 2 books, one on prayer, the other entitled *Le Guia de Pecadores*, 1556, both of which enjoyed immense popularity. See P. Rousselot, *Les Mystiques Espagnoles*, 1867; also studies by F. J. Cuervo, 1919, and M. Llaneza, 1926-8.

Granada: 1. Former Moorish kingdom in S. Spain, roughly co-extensive with the present Andalusian provs. of G., Almería, and Málaga (qq.v.). It grew up around

the city of G., and, until 1236, was part of the ter. of the caliph of Córdoba (q.v.). In 1492 it was taken by Ferdinand II (q.v.) and Isabella, and joined to the new Sp. kingdom. With its capture, the Moorish power in Spain was extinguished, and the last Moorish king, Boabdil (q.v.), went into exile.

2. Sp. prov., in Andalucía (q.v.). Its physical features are very varied, the prov. containing the snow-capped Sierra Nevada (q.v.), a hot Mediterranean coastal plain, and a fertile, elevated inland plain. It is watered by many rivs., mainly tribs. of the Guadalquivir (q.v.). There are large mineral deposits, and textiles, brandy, and sugar are manufactured. Area 4838 sq. m.; pop. 794,700.

3. Sp. city, cap. of the prov. of G., on the Genil. It is on the N. side of the



E.N.A.

THE ALHAMBRA: THE COURT OF THE LIONS

Sierra Nevada, and is built around 2 hills separated by a stream, the Darro. In the SE. is the Alhambra (q.v.), and above it the anct Moorish summer palace, the Generalife, with its famous gardens. On the other side of the Darro is the old walled tn, on the outskirts of which is Albaicin which has cave-dwelling gypsies. The main part of the modern tn is in the W. The archiepiscopal Gothic and Renaissance cathedral is one of the finest in Spain, and among the many other notable churches is the 16th-cent. Capilla Real, which contains the tombs of Ferdinand II and Isabella. There are many palaces, monuments, and mansions, a univ. (1533), museums, and libraries. G. has a trade in grain, silk, wine, oil, and silver, has some small manufs., and is much frequented by tourists. Pop. 154,150. See MOORS; see also A. F. Calvert, *Granada Present and Bygone*, 1908.

Granados, **Enrique** (1867-1916), Sp. pianist and composer. b. at Lérida, son of an army officer. Studied piano under the Catalanian master, Joan Pujol, and composition under Pedrell. His death, in the

sinking of the *Sussex* by a Ger. submarine in 1916, after the production of his opera *Goyescas* in New York, gave universal prominence to his name, but more in reference to his talent as a composer than as a pianist, though in the latter capacity he was among the greatest virtuosos of any country. In his earlier compositions Grieg and Chopin seem to be his models. In the later work the influence of Albéniz is evident. Other operas have not survived, and *Goyescas* was more successful mainly because it is based on the 2 sets of piano pieces of the same name which are among the finest Sp. music of their time. G. wrote a few orchestral and other works, but it is his piano music, with its national and poetical qualities, that keeps his name alive.

Granard, mkt tn of co. Longford, Rep. of Ireland. The Mote of G. was the site of the royal residence of Calbre, son of Niall the Great. Pop. 1150.

Granby, John Manners, Marquess of (1721-70), Brit. soldier. His father was the 3rd duke of Rutland. He entered Parliament in 1741, but undertook military duties as well, taking part in the campaign of Flanders. He was appointed colonel of the Royal Horse Guards in 1758, and was present in the great action at Minden in the Seven Years War. He was eventually appointed general of the Brit. force in Ferdinand's army, where he gained great distinction. In 1766 he was appointed commander-in-chief, but he resigned his post at the end of 3 years owing to ill-health. See W. E. Manners, *Life of John Manners, Marquess of Granby*, 1899.

Granby, city in Quebec, Canada, 49 m. W. of Sherbrooke. Prin. industries are tobacco, rubber products, synthetic textiles, cotton yarn, woollen cloth, hosiery. Pop. 26,000.

Grand, Sarah, pen-name of Frances Elizabeth McFall (1862-1943), novelist, b. in Ireland, daughter of Edward John Bellenden Clarke, Lt. R.N. She married, at 16, Surgeon Lt.-Col. McFall (d. 1898). She became famous through her first novel, *Idealta*, 1888. She also wrote *The Heavenly Twins*, 1893; *The Beth Book*, 1897; *Babs the Impossible*, 1900; *Adam's Orchard*, 1912; *The Winged Victory*, 1916; and *Variety*, 1922. She took part in the campaign for women's rights, and also in the municipal affairs of Bath, of which city she was mayoress in 1923 and 1925-9.

Grand Alliance, alliance of England, the Holy Roman Empire, and the Netherlands against France, 1701, subsequently joined by Savoy, Prussia, and Portugal, aimed at preventing a union of the crowns of France and Spain. See further SPANISH SUCCESSION, WAR OF THE.

Grand Bahama, one of the prin. is. of the Bahamas, West Indies, in lat. 26° 41' N. and long. 79° W., 110 m. NW. of Nassau. The prin. trade is in timber and fish. It is about 75 m. long and 9 m. wide. Area 430 sq. m.; pop. 2300.

Grand Bank, great submarine elevation in the N. Atlantic, SE. of Newfoundland; it is a free fishing-ground, teeming with cod and other fish. Area about 500,000 sq. m.

Grand Bassa, seaport of Liberia, West Africa, about 50 m. E. of Monrovia.

Grand Bassam, Fr. roadstead of the Ivory Coast (q.v.). Pop. 4867.

Grand Canal, The: 1. The main waterway of Venice (q.v.), from which branch the lesser canals. It is 2½ m. long, is like a reversed S in shape, and is lined with beautiful buildings.

2. Or **Imperial Canal**, once one of the most important means of communication in China, originally devised to supplement the deficiencies of the road system. Also called Yunho (transport), it extends from Hangchow to Peking, covering a distance of nearly 1000 m. This canal has existed for centuries, the first section, from the Yangtsekiang to the Hwei R., being opened c. 500 BC. The section of the canal lying between Hangchow and the Yangtsekiang was constructed early in the 7th cent. In the 18th cent. it was found necessary to protect the canal from sudden inundations, and for this purpose a double series of lakes was formed on the W. side of the canal to enable the surplus waters to discharge themselves and flood the land beyond. The main body of the stream empties its waters into the Yangtsekiang.

Grand Canyon, spectacular gorge of the Colorado R. in Arizona, U.S.A. The greatest of a series of such canyons, it



U.S. Information Service,
American Embassy

THE GRAND CANYON

is 217 m. in length, from 3000 to 6000 ft in depth, and from 4 to 18 m. wide from rim to rim.

Grand-Combe, La, Fr. tn in the dept of Gard. It has coal and zinc mines, and glassworks. Pop. 14,200.

Grand Combin, see COMBIN.

Grand Duke, title of the sovereigns of sev. of the states of Germany prior to the revolution of 1918 at the close of the First World War. The title was also held by many members of the Russian imperial family.

Grand Falls: 1. Cataracts of the Hamilton or Grand R., in Labrador, situated about 250 m. from the mouth of the riv. There are 2 falls, each having a clear drop of 300 ft or more, with a power potential of some 2,500,000 h.p.

2. City on Exploits R., Newfoundland, founded in 1905, and engaged in the manuf. of paper. Pop. about 5500.

Grand Forks, city of North Dakota, U.S.A., and cap. of G. F. co. It is situated on the W. bank of the Red R., opposite the mouth of Red Lake R.; it is served by 2 railways, and is about 75 m. N. of Fargo. The surrounding dist. is a rich wheat valley, and a trade in wheat and flour is carried on. G. F. has grain refining and meat packing, and produces dairy products, poultry, livestock, sugar-beets, and candy. On the borders of the city is the univ. of North Dakota, opened in 1884. A trading post of the NW. Fur Company was estab. here in 1801, and permanent settlement began in 1871. The city was chartered in 1881. Pop. 26,836.

Grand Haven, cap. of Ottawa co., Michigan, U.S.A., port city on Lake Michigan at mouth of Grand R., opposite Milwaukee, Wisconsin. It has fisheries and manufs. printing presses, tools, and plumbing fixtures. It ships grapes, celery, and potatoes, and is a summer resort. Pop. 9500.

Grand Island, tn of Nebraska, U.S.A., and the cap. of Hall co., situated on the Platte R., and served by railways and an air service. It has an extensive trade in cattle, grain, and dairy products, and has a large beet-sugar manuf., besides creameries, flour-mills, marble works, etc. The U.S.A. Central Monitoring Station for (radio) broadcasts is here. Settlement was begun in 1857, and the city was incorporated in 1873. Pop. 22,682.

Grand Jury, see JURY.

Grand Manan, is. at the entrance of the bay of Fundy in the co. of Charlotte, New Brunswick. Well known as a health resort. Greatest length is 16 m. and greatest breadth 6 m. Pop. 2700.

Grand Mère, city in Quebec, Canada, 27 m. N. of Trois-Rivières, on the St Maurice R. Prin. industries are leather shoes, textiles and clothing, pulp and paper. Pop. 13,900.

Grand National, Eng. steeplechase, and the prin. cross-country horse-race of the season. It was inaugurated in 1839 and takes place in Mar. or April at Aintree, near Liverpool, on the Friday or Saturday of the Liverpool Spring Meeting.

The course is 4 m. 856 yds, and includes 30 jumps. The water-jump is 15 ft across, and other difficult obstacles are Valentine's and Becher's Brooks and the Canal Turn.

Grand Pré, vil. in Nova Scotia, situated in Kings co., 15 m. from Windsor. Stands in the midst of very fertile country. G. P. has become famous as the scene of Longfellow's poem *Evangeline*. Pop. 900.

Grand Rapids, city, cap. of Kent co., Michigan, U.S.A., on the Grand R., 60 m. WNW. of Lansing. It is a furniture-making and marketing centre for the whole U.S.A., also the distribution centre for a dairying and fruit-growing area. G. R. has gypsum mining and processing and manufs. foundry products, refrigerators, and paper products. It is the seat of Calvin College and Aquinas College. Other institutions include an art gallery, a public library, and a furniture museum. Pop. 176,500.

Grand River, The: 1. Canada, rises in Grey co., flows S. and then SE., entering Lake Erie after a course of 150 m. It can be used for navigation for 70 m. up, and communicates with Lake Ontario by the Welland Canal.

2. One of the head streams of the Colorado R., U.S.A.; it rises in the Rocky Mts. and joins the Green in Utah, flowing through a very mountainous dist. Length 348 m.

3. In S. and SW. Michigan, U.S.A., rises near Jackson and flows N., then NW. and W. past Grand Rapids into Lake Michigan at Grand Haven. It is about 260 m. long.

4. Rises near Creston, Iowa, U.S.A., and meanders c. 215 m. SE. to Missouri R. below Brunswick, Missouri.

Grand Serjeanty. In the feudal system of land holding tenure by G. S., or *per magnum servitium*, meant that the vassal held his land on condition of rendering special services to the king instead of serving the king generally in time of war. The services were always free, but were uncertain in nature. Instances of such services were carrying the king's banner or lance when he went to war, and filling the post of butler, champion (officer whose duty it was to ride fully armed into Westminster Hall at the banquet, and challenge to single combat any who should deny the king's title to the crown), or other officer at his coronation. In contradistinction to G. S. was the tenure by *petit serjeanty*, where the duties or services were of a somewhat servile nature (see *PETIT SERJEANTY*). A rather similar tenure was that by *coronage*, where the tenant's duty consisted in winding a horn to give men warning of the coming of the Scots or other enemies. See *FEUDALISM*.

Grand Union Canal, part of the E. portion of the canal system of Great Britain, connecting London via Northampton and Leicester to Nottingham and the R. Trent. See also *CANAL*.

Grandet, Jean François, see BLONDIN, CHARLES.

Grandi, Dino, Count (1895-), It. politician, educ. for the law at Bologna.

He took part in the Fascist march on Rome; was minister of foreign affairs, 1929-32. From 1925 to 1932 G. was the permanent lt. delegate to the council of the League of Nations; and lt. ambas. in London, 1932-9. He was minister of justice, 1939-43. At the meeting of the Fascist Grand Council 25 April 1943 his order of the day led to the fall of Mussolini and the Fascist regime. G. fled later to Portugal and has lived there ever since. Pubs.: *Origins of Fascism*, 1929, and *Italian Foreign Policy*, 1931.

Grandpré, Fr. tn in the dept of Ardennes, on the R. Aire, and near to one of the most important passes in the Argonne (q.v.). Pop. 660.

Grandville, pseudonym of the celebrated Fr. caricaturist Jean Ignace Isidore Gérard (1803-47), b. at Nancy. The work which brought him fame was the *Métamorphoses du Jour*, 1828, in which various human types appeared with animal heads. He was also well known as a book illustrator; he illustrated eds. of *Gulliver's Travels*, *Don Quixote*, and La Fontaine's *Fables*. His political caricatures also came in for much praise. He d. in a mental hospital at the age of 44. See C. Blanc, *Grandville*, 1855.

Granet, François Marius (1775-1849), Fr. painter, b. Aix-en-Provence, son of a master builder. Learned painting from Constantin, a landscape painter, and in the studio of David. He became famous for Capuchin studies with striking effects of light. His masterpiece is 'Chœur des capucins de la place Barberine.' In water-colour, also, he was a pioneer of landscape. He bequeathed a large collection of pictures to his native tn.

Grange: 1. Or **Grange-over-Sands**, popular seaside resort on Morecambe Bay, N. Lancs, England, 7 m. from Lake Windermere. At Cartmel, 2 m. away, is a priory church, founded in 1188 by the earl of Pembroke; the gatehouse which formed the NW. corner of the priory's boundary wall still remains. Pop. 3000.

2. Vil. of Cumberland at the S. end of Derwentwater and at the entrance to Borrowdale. Pop. 100.

Grangemouth, seaport and burgh in Stirlingshire, Scotland, at the entrance of the Forth and Clyde Canal, about 3 m. NE. of Falkirk. Coal is mined in the immediate vicinity. There are saw-mills, oil refineries, chemical works, and shipyards. The chief exports are pig-iron, iron ore, and timber. It has direct communication with the Continent. Docks (83 ac.) were opened in 1905. Pop. 16,000.

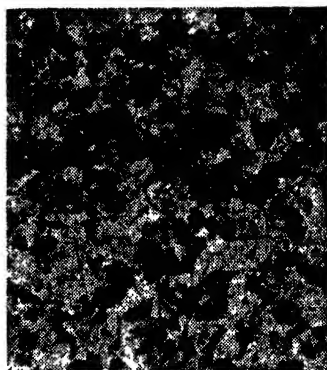
Granger, James (1723-76), biographer, b. Shaston, Dorset. Educ. at Oxford, he took orders and became vicar of Shipplake, Oxon. He pub. a *Biographical History of England*, 1769, which had blank pages for the insertion of engraved portraits, of which he himself collected 14,000. It started a fashion for 'grangerising,' a term particularly applied to interleaving a book with illustrations cut from others. His letters were ed. by J. P. Malcolm in 1805.

Granicus (modern Biga Çal), riv. in Asia Minor. Its source is in Mt Ida and it flows into the sea of Marmora. Here Alexander the Great defeated the Persians in 334 BC, and it was also the scene of the defeat of Mithridates in 73 BC by Lucullus.

Granier de Cassagnac, see CASSAGNAC.

Granite, group name for sev. plutonic or deep-seated intrusive igneous rocks which together form a large proportion of the plutonic rocks of the continents.

G. consists of a completely crystalline assemblage of quartz, feldspar, and mica. Hornblende, or more rarely augite, may



GRANITE

The light mineral is orthoclase and the very dark mineral is black mica. The intermediate or greyish mineral is quartz, which appears dark in the photograph by reason of its transparency.

be present and accessory minerals are always present; apatite, sphene, zircon are common accessories.

To the naked eye G. is a pink, grey, or white rock with an obvious crystalline texture. In porphyritic G. a part of the feldspar forms crystals much larger than the rest; the large crystals may reach an in. or two in size. The Shap G. is a porphyritic G. much used in Britain as an ornamental stone.

Gneiss is an altered form of G. modified by the action of gases or liquids which have made the G. over to quartz and mica. Pegmatite is a coarse-grained rock which forms veins, which are usually found near G. masses. Pegmatites form from the magma which gave rise to G. and represent the last differentiate of the magma. They often contain valuable mineral deposits along with the quartz, feldspar, and mica of which they are chiefly composed.

The chief use to which G. itself can be put is as a building stone; blocks of great size can be obtained which makes it especially valuable for engineering works.

such as breakwaters; it weathers slowly and is excellent for use in tns. When polished it makes a fine ornamental stone. G. can be found in most mt chains. In Britain G. is worked in Aberdeen, in Cornwall, in the Channel Is., at Shap, and in Ireland, and on a smaller scale at a number of other places.

Granite City, in Illinois, U.S.A., on the Mississippi R., 6 m. N. of East St Louis. It is a railway centre with manufs. of iron and steel products, railway equipment, chemicals, and food products. Pop. 29,500.

'Granite State, The,' see NEW HAMPSHIRE.

Grant, Albert (1830-99), *b.* Dublin, son of W. Gottheimer of London; known as Baron G. His early attempts at company promoting were enormously successful, and in 1874 he purchased Leicester Square, which at that time was practically waste land. He had this land laid out properly and presented it to the Metropolitan Board of Works for the benefit of the public. He was twice member of Parliament for Kidderminster. His later speculations were not fortunate, and he *d.* a comparatively poor man.

Grant, Duncan James Corrow (1885-), painter, *b.* Rothiemurchus, Inverness, the son of an army officer. He was educ. at St Paul's School with the intention of taking up an army career. This was abandoned, however, and he was sent to the Westminster School of Art. He continued his studies in Italy and Paris, where in 1906-7 he came under the influence of Cézanne. This is evident in 'The Tight-rope Walker,' 'The Hammock,' and 'Dead Mimosa.' Since then, apart from travels in North Africa, Greece, and elsewhere, he has worked mainly in London, the S. of France, and latterly in Sussex. He was represented in the Post-Impressionist exhibition in London in 1913, and in that year also became associated with Roger Fry in the craft-work of the Omega Workshops. G. possesses a highly cultivated decorative talent which he has put to good use in room decoration and theatrical *décor* as well as in designs for pottery and textiles. His reputation rests mainly on his oil paintings, which are noted for their vitality, their delightful use of colour, and the rhythmical harmony which he imparts to his subjects, whether still life, modern interiors, portraits, or scenes from classical legend. His first one-man exhibition was in 1924, and he has also exhibited in the New Eng. Art Club and as a member of the London Group. Pictures by him now in the Tate Gallery include 'The Lemon Gatherers,' 1903, 'Girl at Piano,' 1938, 'Portrait of Vanessa Bell,' 1942, and 'Haystack before Trees,' 1940.

Grant, Sir Francis (1803-78), Scottish portrait painter, *b.* Edinburgh. He became an R.A. in 1851. In 1866 he became president of the Royal Academy and in the same year was knighted. Amongst the more famous of his works are an equestrian portrait of the queen and prince consort, and portraits of the

marchioness of Waterford, Palmerston, Macaulay, and Russell.

Grant, Sir James Hope (1808-75), general, *b.* Kilgraston, Perthshire, brother to Sir Francis G. He greatly distinguished himself in the Sikh wars. He was of great service during the mutiny, taking part in the relief of Cawnpore and the retaking of Lucknow. Commanded the cavalry at the siege and capture of Delhi. After the mutiny had been broken he commanded the army which finally pacified India. He commanded the Brit. forces in the 3rd Chinese war, 1860-1. From 1861 to 1865 he was commander-in-chief at Madras. See life by H. Knollys, 1894.

Grant, Sir Patriok (1804-95), field marshal, *b.* Auchterblair, Inverness-shire, entered the Bengal native infantry as an ensign and became a captain in 1832. He rose fairly rapidly in the service, and was present at the battles of Maharajpur (1843), Moodkee (1845), and Sobraon (1846). He served under Sir C. Napier in 1851, and from 1856 to 1861 he was commander-in-chief of the Madras army. In 1857 he took over the command of all troops in India, and directed the operations against the mutineers until the arrival of Sir Colin Campbell. He was governor of Malta (1867-72), and made field marshal (1883). From 1874 to 1895 he was governor of the Royal Hospital at Chelsea.

Grant, Robert (1814-92), astronomer, *b.* Grantown, Morayshire. He received the gold medal of the Royal Astronomical Society in 1856 for a work entitled *A History of Physical Astronomy from the Earliest Ages to the Middle of the Nineteenth Century*. In 1859 he became prof. of astronomy in Glasgow Univ. He pub., in 1883, *Glasgow Catalogue of 6415 Stars* and, 9 years later, *A Second Glasgow Catalogue of 2156 Stars*.

Grant, Ulysses Simpson (1822-85), Amer. general, 18th president of the U.S.A., *b.* Point Pleasant, Ohio. He was descended from a Scottish family which had settled in Massachusetts in the 17th cent. He was brought up on a farm in Clermont co., Ohio, but was sent to West Point to the military academy there, and entered the army of the U.S.A. He was present at the battles of Palo Alto, Resaca de la Palma, and at the capture of Monterey. He was also with Scott in his Mexican campaign, being twice promoted for bravery. After this latter war he returned to the U.S.A., resigned his commission, and lived for some time on a farm near St Louis, Missouri. On the outbreak of war in 1861 he offered his services to the Federals, and was appointed as a lieutenant-colonel to a Missouri infantry regiment. He soon proved his ability as a soldier and was made a brigadier-general. He fought at the battle of Belmont, captured Fort Donelson on the Cumberland, and made a great attack in 1863 on Vicksburg, forcing the enemy to surrender, and taking over 31,000 prisoners. He was then made major-general, placed in command of the div. of the Tennessee, and

defeated Bragg at Chattanooga. In 1864 he was made lieutenant-general and given supreme command of the U.S. Army. His campaign as commander-in-chief was the bloodiest of the war. The great battles of the Wilderness, Spotsylvania Courthouse, and Cold Harbor crippled the enemy, and finally the taking of Petersburg caused the evacuation of Richmond, the S. cap. On 9 April 1865 Lee surrendered the whole of his army. This practically ended the war. In the next year G. was made general, and in 1868 was elected president. At the expiration of his term of office he was again elected. In 1880 his friends wanted to have him nominated for a third term, but there was so much sentiment against this that the project was dropped. Probably the greatest event of his presidency was the peaceful settlement of the *Alabama* claims. When he retired from the presidency he accepted a position as a partner in a banking firm, which, however, in 1884 suspended payment, the 2 other partners having defrauded G. and absconded, ruining the ex-president. In the same year he commenced to write his autobiography to earn money for himself and his family. He d. in the following year of cancer of the tongue. Before his death, however, he was restored to his rank of general, which he had to resign on becoming president. See *Personal Memoirs*, and lives by J. Anderson, 1864, W. Church, 1897, C. Atkinson, 1908, H. Garland, 1920, and R. R. McCormick, 1934.

Grant, in Eng. law a term which, in its widest sense, is a synonym for any transfer of property. In a narrower sense it is interchangeable with 'assurance,' as meaning a conveyance by deed of lands. In this sense it connotes not only such old forms of conveyance as feoffment, and bargains and sales, but also all such existing forms as leases, charges, and settlements. In this sense, too, it was contrasted with transfer by 'livery of seisin,' i.e. by delivery of possession; practically all real property is now conveyed by deed, but formerly corporeal hereditaments in possession were transferable by mere delivery of possession, whereas incorporeal hereditaments (reversions, remainders, advowsons, tithes, rights of way, franchises, annuities, rents, etc.), not being physically capable of delivery, were said to lie in G., i.e. they were transferred by deed. In relation to *personally* G. is used as opposed to *gift* (q.v.), which latter term implies a transfer without consideration (q.v.).

'**Granta**,' Cambridge Univ. magazine, founded in 1889, appearing 3 times a term. It contains satirical and light articles, fiction, verse, and some criticism, not exclusively from members of the univ. It is ed. by an undergraduate, appointed for a period of 1 year.

Granth, the sacred book of the Sikhs. The G. consists of 2 parts: the *Adi G.* (*Adi* = original) compiled in the late 16th cent. by the 5th Guru of the Sikhs, Guru Arjun, from the writings of Guru

Nanak, founder of the faith; and the *Dasam G.*, compiled by the 10th Guru, Guru Govind Singh.

Grantham, municipal and parl. bor. of Lincs, England, situated on the R. Witham, an important railway junction. The par. church of St Wolfram is a most magnificent building, mainly in the Early Eng. style. Two libraries of the 16th and 17th cents. are preserved in the church. There are many other old and interesting buildings of note, among them Grantham House, now National Trust property, once known as Hall Place, after its owners, the Hall family, wealthy wool merchants in medieval times; it dates from the late 14th and early 15th cents., and was fairly extensively altered in the 18th. Princess Margaret, daughter of Henry VII, 'lodged there on her way N. to marry James IV of Scotland in 1503. The main hotel of the tn, the 'Angel,' was originally a hostel of the 15th cent.

The chief industries of the tn are manuf. of implements for agric. use and malting. It also has iron foundries. G. is mentioned in the Domesday Book, and was originally governed by the bailiff of the lord of the manor. It was granted a mayor and alderman early in the reign of Edward IV. From 1463 to 1885 G. returned 2 members to Parliament, but by the Redistribution Bill of the latter year the representation was reduced to one. The tn has a famous grammar school, founded in 1528, of which the best-known pupil was Sir Isaac Newton. There is an important R.A.F. station. Pop. 23,460.

Granton, port forming part of the city of Edinburgh (q.v.), on the Firth of Forth, with timber yards, and printing ink and chemical works. G. was made a head port in 1860, was annexed to Edinburgh in 1900, and is the H.Q. of sev. steamboat lines.

Grantown-on-Spey, mrlkt tn of Morayshire, Scotland, on the R. Spey, 20 m. S. of Forres, founded by Sir James Grant in 1766. Pop. 1550.

Granulite, name used by petrographers for sev. distinct classes of rocks. By Fr. geologists it is regarded as synonymous with muscovite-biotite granite. Ger. petrologists give the term to a metamorphic rock consisting essentially of small irregular crystals of quartz and orthoclase with minute pale red garnets; these last may be accompanied by kyanite, zircon, sillimanite, etc. Saxony is a typical region for G.s of this kind. In Britain, the term is often applied to any metamorphic rock with a finely granular texture.

Granville, or **Granvella**, Antoine Perrenot, Cardinal de (1517-86), Sp. bishop and diplomat, b. Besançon, his father being a lawyer who afterwards became chancellor of the empire under Charles V. He studied law and divinity at Padua and Louvain, and at the age of 23 became bishop of Arras. He had diplomatic ability, and in 1550 became secretary of state. He helped to draw up the treaty of Passau (1552), and when the emperor abdicated G. transferred his services to Philip II.

He negotiated the marriage of Mary of England and the treaty of Cateau Cambresis. He became archbishop of Malines in 1560 and a cardinal in 1561. In 1559 he became adviser to the Sp. regent in the Netherlands, and from 1570 to 1575 was viceroy of Naples. His political influence on Philip II was very great indeed.

Granville, 1st Earl of, see CARTERET.

Granville, or Grenville, Baron Lansdowne (1667-1735), poet and politician, b. Cornwall. Educ. at Cambridge, he wrote some verses eulogising James II on his accession, but, after the revolution of 1689, he lived in retirement for some time, devoting himself to literature. His tragedy *Herick Love*, 1698, was acted with great success. This was followed by the dramatic poem, *The British Enchanters*, 1706. In Queen Anne's reign he secured a seat in Parliament and became secretary-at-war. He married a daughter of the earl of Jersey and was raised to the peerage in 1711. In George I's reign he was sent to the Tower on suspicion of taking part in a plot against the gov., but was released in 1717, and, later, went to France, where he lived for some years. See E. Handasyde, *Granville the Poète*, 1923.

Granville, George Leveson-Gower, 2nd Earl (1815-91), Brit. statesman, eldest son of the 1st earl, educ. at Eton and at Christ Church, Oxford. He was an M.P. from 1836 to 1846, when he succeeded to the earldom. He was made vice-president of the Board of Trade in 1848 and foreign secretary in place of Palmerston in 1851. He was invited to form a ministry in 1859, but was unable to do so, and served as president of the council in the administration of Lord Palmerston. In 1868 he was colonial secretary in the first administration of Gladstone, and was foreign secretary in the Liberal administrations from 1870 to 1874 and from 1880 to 1885. As a politician and diplomat he had great influence, but his tenure of the foreign secretaryship gives him no marked place amongst the great statesmen of the time. See life by E. P. Fitzmaurice, 1905.

Granville, Fr. port and watering-place in the dept of La Manche, at the mouth of the Bosq, on the Eng. Channel. The upper tn is picturesquely placed on a promontory, surrounded by ramparts dating from 1720. The lower tn has a sea-wall and a beach. The harbour is deep, and there is regular communication with the Channel Is. Oyster fishing is important, and there are manufs. of brandy, ironware, leather goods, and chemicals. Pop. 10,100.

Granville-Barker, Harley (1877-1946), playwright, critic, and actor-manager, b. Kensington, London, son of Albert James B. and Mary Elizabeth, daughter of an It. physician who had settled in London and changed his name from Bozzi to Granville. He made his first appearance on the stage in 1891 under Charles Hawtrey and afterwards acted in Ben Greet's and Wm Poel's Shakespearian companies. In partnership with J. E. Vedrenne he be-

came manager, in 1904, of the Royal Court Theatre, Sloane Square, though he did not abandon acting, himself interpreting many leading parts in Shaw's plays. The Vedrenne-Barker partnership, which also centred in the Kingsway and Savoy Theatres, not only gave London an opportunity of seeing the plays of Euripides, but succeeded also in popularising those of Shaw. G.-B. had first become directly acquainted with the plays of Shaw through his connection with the Stage Society—to which he served as producer—founded in 1899, and nothing in his earlier years contributed more than this connection to his histrionic development and sense of dramatic values. His *Voysey Inheritance*, 1905, is perhaps his greatest play; certainly it was the most successful with the public, and it was revived at Sadler's Wells in 1934. Then came *Waste*, 1909, a play dramatising the impact of the moral conventions on the public life of a statesman; the censor refused a licence for it, and this refusal was the spearhead of the protest against the censorship of plays which led to the Royal Commission of 1909. In a later venture at the Savoy (1912) he produced Shakespearian plays in an original manner, notably *Twelfth Night*, the costumes and stage-setting being new in style, unobtrusive yet adequate, thus leaving the minds of the audience free to take in the play. G.-B. enabled some thousands of his contemporaries to hear, for the first time, Shakespeare as he should be heard; and he prescribed the correct tempo in a Shakespearian play as in a great piece of music. The production of *A Winter's Tale* at the Savoy in 1912, and of *A Midsummer Night's Dream* in 1914—both of which productions roused violent enthusiasm and equally violent hostility—exemplified G.-B.'s preference for a 'conventional' décor to a realistic one, for the reason that a realistic décor tended to do the work of the actors. He said that 'the foundation of the whole of the theatre is acting, and nothing else.' The last of his original plays to be seen on the public stage was *The Madras House*, produced in 1910, which has been described as the most Shavian of all his plays. In collaboration with Berte Thomas he wrote *The Weather Hen*, and he was part author, with Laurence Housman, of *Prunella*, 1906, a fantasy. He collaborated with Wm Archer in a book called *A National Theatre*, 1907, and he pub. *The Exemplary Theatre* in 1922. His later plays included *The Secret Life*, 1923, and *His Majesty*, 1928. At the time of his death he had not accomplished the full task which he set out to perform in Shakespeare criticism; in Jan. 1946 he produced the 5th vol. of his celebrated *Prefaces to Shakespeare*. In his later years he rendered notable service by translating the plays of the Sp. dramatists, Martinez Sierra and the Quinteros.

Grac, El, see VALENCIA.

Grão Pará, see PARÁ.

Grape, see VINE.

Grape-fruit, see CITRUS.

'Graphic,' illustrated weekly newspaper, founded in 1869 as a jour. of independent political principles, and appealing to popular taste by reason of its photographs, original drawings of topical interest, reproductions of masterpieces of painting and drawing, and excellent serials, which were illustrated by leading artists of the day. Hardy's *Tess of the d'Urbervilles* first appeared in the *G.* It was amalgamated with the *Sphere* (q.v.) in 1932.

Graphic Arts, *see* DRAWING; ENGRAVING; ETCHING; PAINTING.

Graphic Statics deal with the determination of stresses, tensions, etc., of frameworks and systems in equilibrium, by geometrical methods of construction. A force is completely determined when its magnitude, direction, sense, and point of application are known. It may, therefore, be represented by a straight

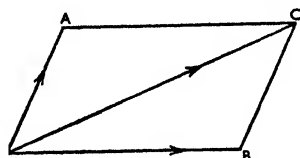


FIG. 1. PARALLELOGRAM OF FORCES

line of definite length, drawn in a given direction through a point, with an arrow head to determine the sense. It is proved that the resultant of 2 forces acting on a particle may be found by representing the forces by 2 straight lines OA, OB (Fig. 1), drawn through a point O, and by completing the parallelogram OACB. Then the diagonal OC represents the resultant in magnitude and direction. It is evident that the 3 sides of the triangle OBC represent the 3 forces in magnitude and direction, though BC does not represent the point of application. Thus if we are not concerned with the point of application, the proposition (known as the *Triangle of Forces*) may be stated thus: If 2 forces acting at a point are represented in direction, magnitude, and sense by 2 sides of a triangle OB, BC, taken in order, then the third side OC similarly represents the resultant. Further, the 3 forces OB, BC, and CO, if acting at a point are in equilibrium. This may be extended to the *Polygon of Forces* which states that the resultant of forces represented by the lines AB, BC, CD, DE ... HK taken in order is represented by the line AK which closes the polygon. Consider first the simple case of a load supported by a simple wall crane consisting of 2 bars, considered weightless (Fig. 2). The pin at O is kept in equilibrium by 3 forces acting along OA, OB, and OC. Draw the load line XY, vertically, to some given scale, say 1 in. to 1 ton. Through X and Y draw lines XZ and YZ parallel to BO and AO. Measure YZ and ZX and

find the weights their lengths represent, and hence are found the pull which BO exerts on the pin O, i.e. the tension in BO, and the force of compression in AO.

To determine the magnitude and the line of action of the resultant of any number of forces of given magnitudes acting on a body in given straight lines, let p, q, r, s, t be the lines of action (Fig. 3) of the given forces. Draw the vector AB to scale to represent the force along p . Similarly draw BC, CD, etc., parallel to q, r , etc., and proportional to the forces along them. Join AF and take any point O called the pole. Join OA, OB, etc. On p take any point P, draw PV parallel to AO, PQ parallel to BO, cutting q in Q. Through Q draw QR parallel to CO, and so on, finally drawing TV parallel to OF. Then the straight line through V, parallel and equal to AF, completely determines the resultant. This may be proved from the polygon of forces. The 2 figures are known as the *link or funicular polygon* and the *vector polygon* respectively. When the vector polygon is closed the forces are either in equilibrium or are equivalent to a couple. When the link and vector polygons are both closed the forces are in equilibrium. To find the stresses in the bars of a roof truss of the shape shown in Fig. 4, where the joints M, N, and P are

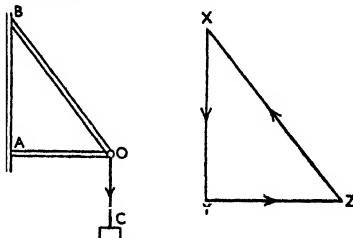


FIG. 2. TRIANGLE OF FORCES

loaded, and to determine the reactions at the supports L and Q. Here the vector polygon becomes a straight line called the line of loads. Draw the load line AD, AB, BC, and CD, being respectively proportional to the loads at M, N, and P. Take any pole X and join XA, XB, XC, XD. Take any point T on the vertical through L, and draw TU, UV, etc., successively parallel to XA, XB, etc., and join TY. Through X draw XO parallel to TY. Then OA and DO represent the reactions at the supports L and Q. For the stress diagram consider first the forces at L; OA represents the vertical force. Through O and A draw lines OE and AE parallel to LR and LM respectively. Then EO and AE measured according to the scale will give the stresses in LR and LM. The former is in tension and the latter in compression. Consider now the point Q. In a similar way ODK is the stress diagram and OK and KD measure the stresses in QS and QP. It is now possible to consider

the points M and P. At M we know already the vertical force and the stress in LM. They are represented in the stress diagram by AB and EA. Through B and E draw BF and EF parallel to MN and MR. Then BF and FE represent the stresses in MN and MR. Similarly KH and HC give the stresses in SP and PN. For the point N draw HG and FG parallel to NS and NR. Finally by joining GO, which is parallel to RS, the

The shearing force (S.F.) and the bending moment (B.M.) at any section of a beam or bridge are defined as the sum and the sum of the moments respectively of all the external forces perpendicular to it. To draw the S.F. and B.M. diagrams for the case of a beam or bridge loaded with a given weight at one point. The method here given will hold equally well for any number of loads. Let PQ (Fig. 5) represent the bridge drawn to scale, and

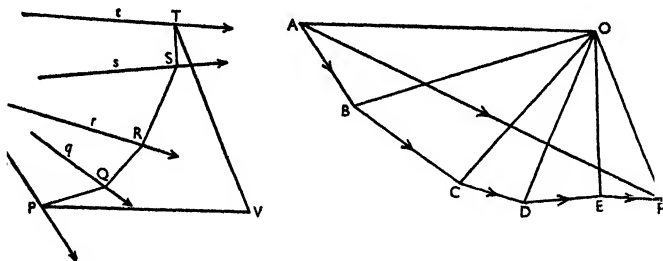


FIG. 3. LINK OR FUNICULAR POLYGON, AND VECTOR POLYGON

stress in RS is measured and hence all the stresses are found. It is convenient to denote the spaces on the figure by small

letters, the position of the given load. Draw the load line AB for the vector polygon. Let X be the pole at a definite distance from AB. Construct the link polygon CDE, closing it by joining CE. Through X draw XO parallel to CE, thus determining the reactions at the ends. Through any point L on PQ draw a vertical line LMN, cutting the link polygon in M and

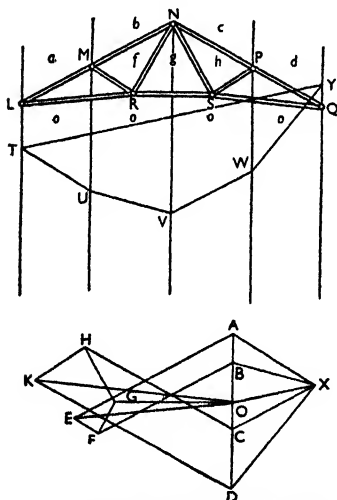


FIG. 4. DETERMINATION OF STRESSES

letters, which correspond to the capitals in the stress diagram. Thus BF in the stress diagram represents the stress in MN between the spaces b and f.

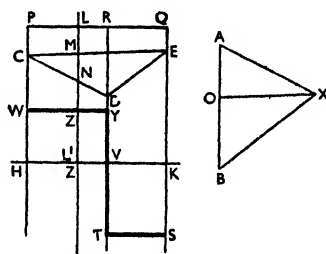
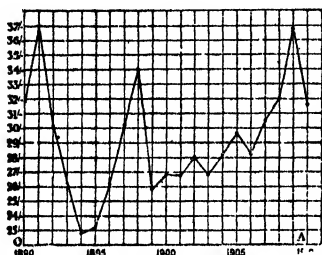


FIG. 5. BENDING MOMENT AND SHEARING FORCE

N. Measure MN and multiply it by the number of units distance of the pole X from AB. Then this product represents the B.M. at X. Thus the B.M. at any point may be found. To determine the S.F. draw any horizontal line HK to intersect the verticals PC and QE at H and K. From K measure off KS downwards along QE equal to OB, and from H measure off HW upwards along CP equal to OA. Through S and W draw ST and WY to meet RD in Y and T. Then the S.F. at L

is measured by the vertical line L'Z, and similarly the S.F. at any point is measured by its vertical distance between HK and the line WYTS, thickened in the figure. When there are a number of loads this line moves upwards in a series of steps and the method is identical with the present one. For a further discussion on the subject see G. C. Turner, *Graphics Applied to Arithmetic, Mensuration, and Statics*.

Graphical Methods of Representation, as the name implies, are methods by which varying values or estimates are placed side by side, so that their changes and fluctuations may be readily seen. Suppose, for example, we are considering the yearly average price of wheat per quarter for the 20 years from 1890 to 1910. Take for convenience a piece of squared paper and draw 2 lines Oz and Oy at right angles to



GRAPH OF WHEAT PRICES, 1890-1910

each other. Let each point along Oz represent 1 year beginning with 1890 at O to 1910 at A (see fig.). Then taking any convenient length as a standard, measure off along Oy and the successive perpendiculars to Oz lengths representing the average prices for each year in turn. By joining up the points so obtained the yearly change may be followed much more readily than from any table of figures. In a similar way the changes in any series of values taken at intervals may be graphically represented; and the method is particularly convenient in the case of economic, political and meteorological statistics, where returns are made at regular intervals and comparison with previous returns are most important. So long as we are considering estimates for which there is one definite value for each year, the graph is obviously a complete record of fluctuations; but where we have a value which changes from day to day, for which observations are only made at longer intervals, the graph made up of a series of short straight lines is no indication of values at any time during an interval. In cases where it is practicable, where, in fact, the values do not fluctuate too abruptly, we can obtain a fair estimate of values for intermediate positions by joining the points by as smooth and continuous a curve as is possible (see INTERPOLATION). The most complete form of graphical representation is ob-

tained in the barograph (q.v.), which traces out mechanically, in one line on specially ruled paper, every slight variation in the height of the barometer throughout the day. A drum covered with ruled paper is made to revolve regularly by means of clockwork, while a pen rising and falling with changes of atmospheric pressure traces out a continuous line.

Graphite, see BLACK-LEAD.

Graphology, science which purports to discover personality traits by the study of the individual's handwriting. Personality as revealed by handwriting was studied by Chinese scholars more than 8 centuries ago. The underlying principle of G. is that, just as the behaviour of everyday life reveals personality, so also does the system of behaviour that makes up the individual's writing habits, and it is held in favour of G. that writing behaviour is particularly easy to study for this purpose since its characteristics are found in the written material produced. Examples of the handwriting of a man between the ages of 27 and 95 are said to show that the basic characteristics of his handwriting remain unchanged. Some of the characteristics remain unchanged even when an attempt is made to disguise the handwriting. Modern G. has developed along 2 main lines. First, what may be called the *global* methods study the characteristics of the handwriting as a whole. For example, in letters that seem to march like soldiers in their stiff uprightness, the graphologist may detect in the writer discipline of will, exactness, or compulsion; in letters irregularly running in all directions he may detect emotional excitability, impulsiveness, or lack of planning; weak writing pressure may seem to him to indicate tenderness, conciliatoriness, or lack of energy; angular forms may be taken to indicate firmness, and so on. In contrast to this, an *analytic* method may be adopted in which such measurable characteristics of the writing as its slope, size of letters, variability, etc., are measured and correlated with personality characteristics. This method has the advantage that its correctness can be statistically checked so that it escapes the charge of subjectivism which can be brought against some exponents of the global method. On the other hand, the correlations found between characteristics of handwriting and personality are not high, and there are better methods of testing personality. H. J. Jacoby is a recent exponent of the global approach who has used illustrative photographs of bodily movements which are analogous to handwriting as a method more rigorous than that of mere theoretical speculation. See R. Saudek, *Experiments with Handwriting*, 1929; H. J. Jacoby, *Analysis of Handwriting*, 1939, and *Self-knowledge through Handwriting*, 1940; and E. Singer, *Graphology for Everyman*, 1940.

Grappa, Monte, see BASSANO.

Grapsus (Gk *grapsaios*, a crab), name of a genus of crustaceans belonging to the

family Grapsidae; they are marine crabs and are very numerous on the shores of the Mediterranean. Frequently they are found on exposed rocks, over which they travel at a very rapid pace.

Graptolites, a group of Palaeozoic colonial marine animals. Their chitinous exoskeleton consists of a series of cup-like thecae arranged along one or more branches, giving a saw-blade appearance. They were mainly planktonic forms which lived suspended under floating seaweed, and are most common in black shales. Their wide distribution and rapid evolution makes them reliable zone-fossils, particularly in the Ordovician and Silurian systems, to which the majority of the group, the graptoloids, are confined. The earliest many-branched G. with a chitinated stolon-system are separated as the dendroids; they range from Middle Cambrian to Carboniferous. G. were formerly thought to have affinities with either the Bryozoa or the hydrozoan Ctenophores, but they have now been shown to belong to the pterobranch div. of the Hemichordata.

Gras, Félix (1844-1901), Provençal writer, b. Maimort in the dept of Vaucluse. He made a distinguished appearance as an author in 1876 by publishing a work called *Li Carbounié*. An epic dealing with the topic of Simon de Montfort and the Albigenians appeared in 1882, and 5 years later he pub. his celebrated collection of Provençal ballads, *Lou Roumancero Provençal*. In 1891 he pub. a series of stories dealing with the Hungarian popes under the title *Li Papalino*. His 3 great novels on the revolutionary period have been trans. into Eng. by C. A. Janvier—*The Reds of the Midi*, 1896, *The Terror*, 1898, *The White Terror*, 1900.

Graslitz, see KRASLICE.

Grasmere, vil. and tourist resort of Westmorland, England, 4 m. NW. of Ambleside, on the edge of the beautiful lake of G. which drains through to Windermere by the R. Rothay. In the churchyard are the graves of the Wordsworths, and of Hartley Coleridge, and Wordsworth himself lived at Dove Cottage (then Town End) from 1799 to 1808. It was later the home of De Quincey, and is now a museum. The par. church is described in Wordsworth's poem *The Excursion*, and Greenhead Gill near by is the scene of *Michael*. Pop. 870.

Grass Lands. Agric. areas may be roughly divided under 3 headings: permanent pasturage, rough grazing land, and arable lands. In England and Wales 10,700,000 ac. are devoted to pasturage, 5,369,000 ac. to rough grazing, and about 13,792,000 ac. are arable lands. In Northern Ireland there are 2,976,000 ac. of farm land of which 1,190,000 ac. are pasture, 697,000 ac. are rough grazing, and 1,089,000 ac. are arable lands. In Scotland two-thirds of the complete area of land, 10,980,000 ac., consists of rough grazing land mainly used for sheep rearing. Arable lands—that is, land suitable for raising crops and ploughing—

are also G. L. at frequent intervals. These are determined by the method for the rotation of crops.

Grass-moth, small moth, allied to the clothes-moth, which inhabits pastures. It is generally brown in colour, and long and narrow in shape, with a pointed head.

Grass of Parnassus, or *Parnassia palustris*, species of Saxifragaceae, which is found in damp places of Britain. The flower consists of 5 sepals, petals, and stamens, and there are also 5 staminodes; the petals are white, and the plant is of graceful appearance. It is fabled to have appeared first on Mt Parnassus, hence its name.

Grass Oil, name under which sev. volatile or essential oils derived from widely different plants are grouped. Ginger G. O., derived from the Indian plant *Andropogon nardus*, and geranium oil, from *Pelargonium radula*, are very similar in properties, and are used for adulterating oil of roses. Turkish G. O. and lemon G. O. or citronella oil are both obtained from India; the latter has an odour resembling citron, and is largely used for scenting soap.

Grass Snake (*Tropidonotus natrix*), ringed snake found in England, Europe, Algeria, and W. and Central Asia. It is of a brownish colour and differs from the common viper or adder in that it has not the zigzag black line down its back. There are 2 yellow or white spots behind its head which make it easy to recognise. The usual length is 3 ft. or a little over; it rarely reaches 4 ft. The snake hisses and strikes out with its head when attacked, but does not bite. Unlike the adder, it is not poisonous. It inhabits moist places, and feeds chiefly on frogs, toads, and fishes. It lays its eggs (which resemble a dove's in size and shape) in mould or under damp leaves. These vary in number and are glued together.

Grass-tree and Black-boy, names given to liliaceous plants found in Australia. *Xanthorrhoea hastilis* and *X. preissii*.

Gräse, Johann Georg Theodor (1814-1885), Ger. scholar, b. Grimma, Saxony. He was the royal librarian and head of the museum of porcelain at Dresden for many years. The greatest of his pub. is *Lehrbuch einer allgemeinen Litterargeschichte aller bekannten Völker der Welt*, 1837-60. He also wrote *Handbuch der alten Numismatik*, 1853.

Grasse, Fr. tn in the dept of Alpes-Maritimes, on a hillside (700-1400 ft above sea-level) overlooking the Mediterranean, 17 m. WSW. of Nice. It has a Gothic cathedral. The tn is a health resort, and is a centre of the perfume industry in the midst of flower-gardens, and olive and orange groves. Fragonard (q.v.) was a native. Pop. 21,200.

Grasses, family Gramineae (q.v.). These form one of the largest families in the vegetable kingdom, and some of its members are of great service to man. They are evergreen, ann., or perennial herbs, though bamboos sometimes reach a height of 100 ft. All G. either flower on a spike upon the same model as wheat,

or upon a panicle such as oats; some are awned or bearded like barley. Each spikelet, whatever the inflorescence, consists of 1 to 5 flowers arranged alternately on a short axis, and beneath the lowest flower there are usually 2 (or more) empty bracts known as glumes. Each flower is sessile in the axil of a bract termed the outer palea or flowering glume, and there is an inner palea, opposite to and higher than the outer one; these 2 paleae completely enclose the flower. In some species both stamens, usually 1 to 3 in number, and pistil are in the same flower, but more commonly the flowers are unisexual. The stem is generally



A, couch; B, cocksfoot; C, fox;
D, false oat

characterised by swollen or tumid nodes to which the sheathing leaf-bases contribute; the long internodes are hollow, and a membranous ligule is developed at the junction of leaf-base and lamina. The ovary is one-chambered and one-ovuled, and the fruit or grain, technically known as a caryopsis, is entirely filled by the seed. G. are abundant on land, and a few species inhabit fresh water, but there are no marine forms. In the tropics they acquire a much greater height than in colder regions, but those species of a 'social' habit, constituting turf, are found only in temperate regions. The cereal G., wheat, oats, barley, rye, maize, rice, and various millets, cultivated for the sake of their grain, are the most valuable food plants for man and beast. Esteemed fodder G. are rye-grass (*Lolium perenne*), fescues (*Festuca* species), cock's-foot (*Dactylis glomerata*), timothy (*Phleum pratense*), and species of *Poa*. *Saccharum officinarum*, is the sugar cane; *Sorghum* species yield guinea corn, kaffir corn, and sugar; and *Zea mays*, indian corn or maize. Leaves of some G. are

valuable for their fibre and paper-making; bamboo gives canes and timber; some G. bind sand, others are well adapted for lawns, and others yield aromatic oils used in perfumery. See LAWNs.

Grassholm, is. some 16 m. from St Ann's Head, Pembroke-shire, South Wales. G. is the property of the Royal Society for the Protection of Birds, and is wardened by the W. Wales Field Society. It is the home of sev. rare species of birds. The is. is especially famous as a breeding ground of the gannet or solan goose. Seals abound in the surrounding waters.

Grasshoppers, insects belonging to the families Locustidae and Acrididae, which have very long hind legs with strong thighs, enabling them to jump great distances. The Locustidae or green G. have very long antennae, 4-jointed tarsi or feet, a long ovipositor, and the stridulatory organ in the wings; while the Acrididae (to which family the 'locusts', the true G., belong) have short antennae, no ovipositor, feet with 3 joints, and the stridulatory organ in between the hind leg and the wing. These insects inhabit woods, thickets, and fields, and feed on vegetables and plants, but some eat flies and caterpillars as well. They generally fly about in the twilight, and being of a green or brown colour can easily hide themselves among the foliage. They lay their eggs either in the earth or in a dry stem; these hatch in spring and produce the young G., which moult 6 times before they become full grown. The 'chirp' is produced by the friction of the hind legs against portions of the wings or wing-covers in the Acrididae, but in the Locustidae by scraping one wing against the other. The common Brit. type is the *Locusta viridissima*, which has a body about an in. long, but the *Decticus verrucivorus* (so called because the Swedish peasants use it to cure warts) is also found.

Grassmann, Hermann Gunther (1809-1877), mathematician and Sanskritist. He was a secondary-school teacher and his scientific talent was not recognised during his life-time. In mathematics his name is connected with his work *Die Wissenschaft der extensiven Größen oder die Ausdehnungslehre*, 1st ed., 1844, 2nd completely revised ed., 1862. At the age of 53 he began his study of Sanskrit and pub. *Wörterbuch zum Rig-Veda*, 1873, and a metrical version *Rigveda*, 2 vols., 1876 and 1878. He enunciated, in 1863, the phonetic law which bears his name and apparently contradicts Grimm's Law (q.v.). His mathematical and physical works were collected posthumously. See *Gesammelte mathematische und physikalische Werke*, 3 vols., 1894-1911.

Grassum, in Scots law, means a sum of money, in addition to the ann. payment stipulated for, paid by a tenant to his landlord or a feu to his superior at the grant of the lease or feu right. See FEU.

Gratian, or Gratianus, was b. at Chiusi in Tuscany at the beginning of the 12th

cent. The greater part of his life was spent in the monastery at Bologna, but he also taught in the univ. He is famous as the founder of the science of canon law and for his book, *Concordia discordantium canonum* or *Decretum Gratiani*.

Gratian (Flavius Gratianus Augustus) (AD 359-83), Rom. emperor, son of Valentinian I and Severa, b. at Sirmium in Pannonia. In 366 he was made consul, and the following year received the title of Augustus. On the death of his father in 375 the troops proclaimed Valentinian II, his half-brother, emperor. G. divided the provs., but the real authority remained in his hands. In 378 he defeated the Lentienses at Argentaria, and in 379, with the help of Theodosius, drove the barbarians out of the Balkans. The first years of his rule were marked by energy and success, but later in life he became indolent and pleasure seeking. This aroused the contempt of the Rom. troops, and they elected Maximus, who was then in Britain, as emperor. He at once crossed to Gaul and defeated G. near Paris. G. fled to Italy, but was overtaken near Lyons and killed.

Gratianopolis, see GRENOBLE.

Grattan, Henry (1746-1820), Irish statesman and the greatest of Irish orators, b. Dublin. He was educ. at Trinity College, Dublin, and gave himself up to the study of the classics, especially the great orators of antiquity. At the age of 21 he entered the Middle Temple, London, but took little interest in his legal studies, availing himself of every opportunity to listen to debates in the House of Commons. In 1772 he was called to the Irish Bar, and in 1775 entered the Irish Parliament as member for the bor. of Charlemont. The nation was then suffering from the loss of markets that followed the war with America, and from the restrictions upon trade which dated back to William III; G. championed the cause of Irish independence, and in 1779 got a total repeal of all the restriction Acts. His next step was to move a declaration for the independence of the Irish Parliament; it was granted, and his countrymen voted him £50,000. This independence, however, was only nominal, without reform, and for this G. pressed. He was also in favour of Catholic emancipation (q.v.), and in 1785 supported Pitt's commercial propositions for establishing free trade between Great Britain and Ireland. In 1792 he succeeded in carrying an Act conferring the franchise on the Rom. Catholics, and in 1794 introduced a Reform Bill; but his mild measures promoted more extreme opinions, the country drifted into rebellion and G. retired from Parliament in 1797. He returned to take his seat for Wicklow, however, in the last session of the Irish Parliament and fought the Union Bill (see UNION, IRISH). He was member for Malton, Yorks, in 1805 and for Dublin in 1806. His last years were devoted to the cause of Catholic emancipation, but, though supported by Canning and other statesmen, he did not live to see his triumph. He

was buried in Westminster Abbey beside Fox. G. was famous for his remarkable eloquence and incorruptible patriotism. See W. Lecky, *The Leaders of Public Opinion in Ireland*, 1861, and lives by H. Grattan (the younger), 1839-46, R. Dunlop, 1889, and A. Zimmermann, 1902.

Grätz, see GRODZISK WIELKOPOLSKI.

Grätz (Austria), see GRAZ.

Graubünden (Switzerland), see GRISONS.

Graudenz, see GRUDZIADZ.

Gravel, collection of small stones formed by the action of water upon rock, which is found in rivs. and on the seashore. It varies much in character and appearance; when the fragments are small the deposit grades into sand, when large it is called shingle. It consists of pieces from all kinds of rock, but pebbles of quartz and quartzite are most common. When first deposited the G. is loose, but after a time it forms a hard rock known as conglomerate. There are various kinds, the best being the 'Kensington,' a pit G. containing large quantities of oxide of iron which makes it binding (a quality essential for a good G.), and gives it a rich colour. Other kinds are the 'Dorset Pea,' composed of flinty pebbles about the size of a pea; the 'Lymington,' a flint G. which comes from Hants; the 'Sussex Pea,' and 'Sussex Bean,' and the 'Shell G.' found on the coasts of the Channel Is. **Gravelines**, Fr. port in the dept of Nord, near the mouth of the Aa. It was a fortress in the 16th cent. and preserves its ant. walls. It has cod and herring fisheries, a small export trade, and manufs. of paper and foodstuffs. Pop. 5200.

Gravelotte, Fr. vil. in the dept of Moselle, 6 m. W. of Metz. The Fr., under Marshal Bazaine (q.v.), were defeated in a fierce battle here in 1870 during the Franco-Prussian War (q.v.). Pop. 270.

Graves, Alfred Perceval (1846-1931), poet, b. Dublin. Educ. at Trinity College there, he became a clerk in the Home Office and then an inspector of schools. His original vols. of verse include *Songs of Killarney*, 1872, *Irish Songs and Ballads*, 1879, and *Father O'Flynn and Other Lyrics*, 1889. A leader of the Irish Renaissance, he ed. many anthologies, including *The Book of Irish Poetry*, 1913, and *A Treasury of Irish Prose and Verse*, 1915. His autobiography *To Return to All That*, 1930, was a reply to his son Robert's *Good-bye to All That* (q.v.).

Graves, Clotilde Inez Mary (1863-1932), journalist, novelist, and playwright, b. Buttevant, co. Cork. Among her plays are the Drury Lane pantomime *Puss in Boots*, 1888, and *The Bond of Ninon*, 1906. Her best-known novel is *The Dop Doctor*, 1910, written under the pseudonym of Richard Dehan. Other works are *Between Two Thieves*, 1912; *The Headquarters Recruit*, 1913; *The Man of Iron*, 1914; *Earth to Earth*, 1916; *A Sailor's Home*, 1919; *The Just Steward*, 1922; *The Lovers of the Market Place*, 1928; and *Dead Pearls*, 1932.

Graves, Richard (1715-1804), poet and novelist, b. Mickleton, Gloucestershire.

From 1748 he was rector of Claverton, near Bath. His best-known book was *The Spiritual Quixote*, 1772, a novel of early Methodism. Others are *Columella*, 1776, and *Eugenius*, 1785.

Graves, Robert James (1790-1853), physician, b. Dublin, where he graduated in medicine, 1818. He then studied in Edinburgh, London, Göttingen, and Berlin. On the Continent he had the experience of being arrested as a Ger. spy in Austria on account of his fluency as a linguist. During a storm in the Mediterranean he put down a mutiny on board ship, afterwards assuming control and saving the vessel. He returned to Dublin in 1821 and was appointed physician to the Meath Hospital. He was a great teacher, introducing continental methods of bedside teaching. He was one of the founders of the Park Street School of Medicine and one of the most important figures in Irish medicine in the 19th cent. His *Clinical Lectures on the Practice of Medicine*, 1848, was an important text-book. G. gave the first accurate account of 'Graves's disease' (exophthalmic goitre) in 1835. See biography by W. Stokes in his *Studies in Physiology*, 1863.

Graves, Robert Ranke (1895-), poet and novelist, b. London, son of Alfred Perceval G. (q.v.). Educ. at Charterhouse and Oxford, he served during the First World War with the Royal Welch Fusiliers, in the same regiment as Siegfried Sassoon (q.v.). In this period he pub. 3 vols. of verse, *Goliath and David*, *Over the Brazier*, and *Fairies and Fusiliers*. In 1926 he was prof. of Eng. at Cairo, and in 1929 he pub. *Goodbye to All That*, an account of the first phase of his life. Resident in Majorca for the next few years, he ran the Seizin Press in partnership with Laura Riding (q.v.), and after the Second World War he went back there. His later vols. of poems are mostly named by the years they cover: his *Collected Poems*, 1938, drew on 19 earlier vols., and was followed by *Poems*, 1938-1945. To the general reading public he is best known as the author of a series of historical novels, *I Claudius*, which was awarded the Hawthornden and Tait Black prizes for 1934; its sequel, *Claudius the God*, 1934; *Count Belisarius*, which received the Femina Vie Heureuse prize for 1939; *The Golden Fleece*, 1944; and *Homer's Daughter*, 1955. Among his critical works are *On English Poetry*, 1922, and a book of essays, *The Common Asphodel*, 1949.

Graves, Thomas, 1st Baron G. (c. 1725-1802), Brit. admiral who served in many famous expeditions, among which may be mentioned the engagement in Chesapeake Bay in 1781 and the operations against the Fr. in Hudson Bay. He was second in command to Nelson at Copenhagen.

Graves, Sir Thomas (c. 1747-1814), admiral, the first cousin once removed of Admiral Thomas G. In 1773 he went on a voyage of discovery in the Arctic Seas with Lord Mulgrave. He was in command of the *Bedford* during the action

in Chesapeake Bay and was present in the engagement at St Kitts. In 1783 he fought the Fr. frigate *Sybilie*, and later was at the battle of Copenhagen.

Graves, Soldiers', see WAR GRAVES.

Gravessend, municipal bor. and mkt in Kent, extending 2 m. along the r. b. of the R. Thames, 22 m. E. of London. It is the gateway of the port of London. G. is mentioned in the Domesday Book under the name of Gravesham and was among the bishop of Bayeux's lands. The municipal bor. was incorporated by charter on 22 July 1562, superseded 5 June 1568, and renewed and extended on 14 Mar. 1632. Queen Elizabeth estab. G. as the point of welcome by the corporation of London for eminent foreign visitors. It was the point of departure for E. Indian and for other sailing ships, and was formerly defended by 2 forts on the Kent side of the riv. and by Tilbury fort on the Essex side. It was formerly a boundary for the coal dues of the port of London. Princess Pocahontas d. at G. in 1617 and is reputed to have been buried at St George's Church. Gen. Gordon of Khartoum resided in G. from 1865 to 1871. His home was destroyed by enemy action in Nov. 1944. There are 2 piers—the Town Pier, built 1834, and the Royal Terrace Pier, built 1845. G. is a H.Q. of Trinity House (London), pilot station, and has a custom house. The corporation owns a promenade and gardens along the riverside. Trade is principally concerned with paper manuf., cement works, electrical supplies, shrimping, and market gardening. One member is returned to Parliament; the parli. constituency includes Northfleet, Swanscombe, and Strood rural dist. Pop. 45,530.

Graves's Disease, see HYPERTHYROIDISM.

Graville St Honorine, Fr. tn in the dept of Seine-Inférieure, just outside Le Havre. It has a fine church, partly 11th cent., and the archaeological museum of Le Havre. There are copper, lead, and zinc mines. Pop. about 13,000.

Gravina, Giovanni Vincenzo (1664-1718), It. jurist, b. Rogiano, near Cozenza in Calabria. In 1699 he occupied the chair of civil law in the college of La Sapienza, and in 1703 that of canon law. He wrote *Origines juris civilis*, which estab. his reputation as a jurist; *De Romano imperio*; *Della ragione poetica*; and sev. tragedies.

Gravina di Puglia, It. tn, in Apulia (q.v.), 32 m. SW. of Bari (q.v.). It stands on a hill above the gorge of the G. R., and has a cathedral, a castle of the Emperor Frederick II, and anet walls. There is a large trade in agric. produce. Pop. 29,900.

Graving Docks, see DOCK and HARBOUR.

Gravitation, term used in physical science for the mutual attraction between masses of matter. The full statement of Newton's law of G. is *Every particle of matter in the universe attracts every other particle with a force whose direction is that of the line joining the two, and whose magnitude is directly proportional to the product of*

the masses divided by the square of their distance from each other. In order to marshal the evidence for this important generalisation it is convenient to consider it under the following heads: (a) the direction of the force between the particles; (b) the law of inverse square of distances; (c) the universality of the law of inverse squares; (d) the proportionality of the force of attraction to the product of the attracting masses. Newton based his investigation into the law of G , on the 3 laws deduced by Kepler from the astronomical observations of Tycho Brahe. Kepler's laws are purely kinematical. They completely describe the motions of planets, but they say nothing about the forces by which these motions are maintained. These laws are enunciated near the end of the article Astronomy (q.v.). In 1687—about 60 years after the death of Kepler—Newton propounded his Three Laws of planetary motion which explained Kepler's laws. From Kepler's second law he showed that the sun's attraction on a planet acts along the line joining the centres of the sun and the planet. From his first law he deduced that the force exercised by the sun on a planet varies inversely as the square of its distance from the sun. From his third law he showed that the acceleration of a planet caused by the sun's attraction varies inversely as the square of its distance from the sun. Slight modifications in Kepler's third law are, however, necessary, and the modification becomes greater with the increasing mass of the planet. The following is the explanation for this.

As every planet has some mass it must attract the sun just as the sun attracts the planet, and if the masses of the sun and planet are S and P , respectively, and the distance between their centres is r , the attraction between them is $GSPr/r^2$, where G is the constant of G , that is, the force in dynes between 2 particles each of mass 1 gm. at a distance of 1 cm., due to their mutual G . The value of G is 6.670×10^{-8} cm.³ gm.⁻¹ sec.⁻². From the well-known formula $F = mf$, where F is the force acting upon a mass m , and f is the acceleration produced, $f = F/m$, and hence the attractive force $GSPr/r^2$ acting on the mass P produces an acceleration $GSPr/r^2$ divided by P , of the planet towards the sun, or GS/r^2 . In the same way it can be shown that the attraction of the planet on the sun produces an acceleration GP/r^2 of the sun towards the planet, and if we imagine the sun to be brought to rest so that its acceleration towards the planet is annulled, the total acceleration of the planet towards the sun would be $G(S+P)/r^2$. The modification in the third law would, therefore, be as follows.

Let P and P' be the masses of 2 planets, S that of the sun around which they revolve at mean distances r and r' in times T and T' . Then

$$T^2(S+P)/T'^2(S+P') = r^3/r'^3.$$

If P and P' are very small compared with S , as in the case of the earth and Venus, they can be ignored in comparison

with S , and the above becomes $T^2/T'^2 = r^3/r'^3$.

In the above discussion the dimensions of the sun and planets have been considered as inappreciable compared with their distance apart. Measurement shows that they are approximately spherical; is, then, the attraction exerted due to the attracting body as a whole, or is it due to its separate particles each acting independently? Newton attacked the question by assuming the law of G , for the separate particles of a body, and thence finding the law of attraction for the body as a whole. He thus arrived at 2 very striking theorems: (1) A spherical shell of uniform matter exerts no attraction on a particle inside it. (2) A spherical shell of uniform matter attracts an external particle as if its whole mass were concentrated at the centre.

Determination of the mass of the earth and the mass of the sun.—Astronomical observations enable us to compare the masses of the various members of the solar systems. For example, the acceleration of the earth towards the sun can be shown to be about 0.6 cm. sec.⁻²; the distance between the two is 15×10^{13} cms. The acceleration of the moon towards the earth can be shown to be about 0.27 cm. sec.⁻², and the distance between them is 4×10^{10} cms. If S is the mass of the sun, E the mass of the earth, then

$$0.6 \frac{GS}{(15 \times 10^{13})^2} \text{ and } 0.27 = \frac{GE}{4^2}$$

therefore the ratio $\frac{S}{E} = 330,000$ approximately. To determine S and E in terms of the terrestrial standards of mass, the kilogramme and the pound, recourse must be had to experiments with terrestrial masses. A body of mass m suspended at the earth's surface is attracted by a force $\frac{G \times E \times m}{R^2}$, where E is the mass of the earth and R its radius. But if g is the acceleration of a body falling freely under the influence of the gravitational force of the earth, the value of this force is also expressed by mg . Then $mg = \frac{G \times E \times m}{R^2}$

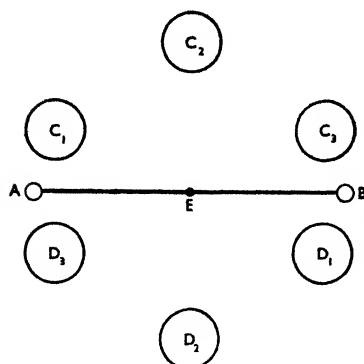
or $E = \frac{gR^2}{G}$. To determine G the force F between two artificially prepared masses M_1 and M_2 at a distance apart d is measured, and since $F = \frac{GM_1 \times M_2}{d^2}$ we

$$\text{get at once } G = \frac{Fd^2}{M_1 M_2}.$$

$$E = \frac{g \times R^2 \times M_1 \times M_2}{Fd^2}.$$

Cavendish's experiment.—An experiment for determining the force of attraction between 2 artificial masses was first planned in the mid 18th cent. by Rev. John Mitchell who did not live to work on the apparatus he had designed and completed. After Mitchell's death the apparatus came into the hands of Henry Cavendish, who largely reconstructed it but adopted Mitchell's original plan. The attracted

masses consisted of 2 small balls, A and B, an in. or two in diameter, connected by a stiff wooden beam suspended at its middle point E by a long fine wire.



The whole of this part of the apparatus was enclosed in a case, carefully coated with tinfoil to secure, as far as possible, a uniform temp. within the case. Irregular distribution of temp. would have resulted in convection currents of air which would have had a serious disturbing effect on the suspended system. To the beam was attached a small mirror with its plane vertical. A small glazed window in the case allowed any motion of the mirror to be observed by the consequent deviations of a ray of light reflected from it. The attracting masses consisted of 2 equal, massive, lead spheres, so mounted that they could be made to move from the positions C_1, D_1 to the positions C_2, D_2 , or C_2, D_2 . Cavendish found that the suspended system was never at rest. The equilibrium position was determined by the method usually employed when weighing with a delicate balance. When the large masses were placed at C_2, D_2 , the oscillations were practically due to the torsion of the wire. If T is the period of vibration for this position of C and D, and I the moment of inertia of the suspended

system, then $\mu = \frac{4\pi^2 I}{T^2}$, where μ is the couple required to twist the lower end of the wire through unit torsion relatively to the top end. The angle θ through which the beam was deflected when the attracting masses were moved from the positions C_1, D_1 to the positions C_2, D_2 was measured.

Then $\mu\theta = \frac{2G \times M \times m}{r^2} \times l$, where $2l$ is the length of the beam and d the distance between the centres of the attracting and attracted masses. Whence $G = \frac{\mu\theta d^2}{2M \times m} = \frac{2\pi^2 I \theta d^2}{T^2 M m}$. Cavendish obtained for the value of G 6.6×10^{-8} dynes. cm.² gm.⁻².

The apparatus was improved by Boys and he obtained the value 6.6576×10^{-8} . The value generally used is that found by Heyl, $6.670 \times 10^{-8} (\pm 0.005 \times 10^{-8})$ dynes. cm.² gm.⁻². See RELATIVITY; ASTRONOMY. See also S. Starling, *Mechanical Properties of Matter*, 1935; A. S. Ramsey, *Introduction to the Theory of Newtonian Attraction*, 1940; F. H. Newman and V. H. L. Searle, *General Properties of Matter*, 1948; F. C. Champion and N. Davy, *Properties of Matter*, 1952.

Gravity, Acceleration of, see GRAVITATION; METROLOGY.

Gravity, Centre of, see CENTRE OF GRAVITY.

Gravity, Specific, see SPECIFIC GRAVITY.

Gray, Asa (1810-88), Amer. botanist, b. Oneida co., New York. In 1842 he was appointed Fisher prof. of natural hist. at Harvard Univ. and devoted himself to the estab. of a herbarium and a library there. His *Manual of the Botany of the Northern United States*, 1862, is his most important work. He also pub. *Botany of Japan in Relation to North America*, 1849, which has had far-reaching results, and many other books.

Gray, David (1838-61), poet, b. Merkleland, Dunbartonshire. He was educ. at Glasgow Univ. for the ministry, but at an early age began to write verse. He became intimate with the poet Robert Buchanan (q.v.), and with him went to London in 1860; there he was befriended by Lord Houghton, but d. soon after of consumption. His chief poem, *The Luggie*, 1862, named from the riv. of his bp., contains much beautiful description, but his finest work was a series of 30 sonnets written in the prospect of early death and blighted hopes, entitled *In the Shadows*. See R. Buchanan, *David Gray and other Essays*, 1868.

Gray, Elisha (1835-1901), Amer. inventor, b. Barnesville, Ohio. He studied for a time at Oberlin College, but afterwards took up the subject of telegraphy, and in 1867 patented a telegraphic switch. He also experimented with the telephone, which he claimed to have invented, his application for a patent being received only a few hrs after Alexander Bell's. He was engaged for some time in the manuf. of telegraphic apparatus, and was the electrical expert of the W. Electric Company of Chicago. Among his inventions are the multiplex telegraph, by which 8 messages can be sent at a time, and the telautograph, by which handwriting can be transmitted.

Gray, John Edward (1800-75), naturalist, b. Walsall. In 1840 he was appointed keeper of the Zoological collections and made them the most complete in the world. He wrote many books, the most important being his catalogues of the Brit. Museum collections.

Gray, Stephen (c. 1670-1736), physicist, was a Charterhouse pensioner, and became a fellow of the Royal Society in 1732. His most important contribution was the div. of substances into electric and non-electrics, and the discovery of methods of their mutual transformation.

He proved that electrification is a surface phenomenon.

Gray, Thomas (1716–71), poet, b. London, son of a scrivener, who was of so cruel and violent a temper that his wife had to separate from him. To his mother and sister, who carried on a business, G. was indebted for his liberal education at Eton (where he became a friend of Horace Walpole) and Peterhouse, Cambridge. Of a studious and reserved nature, he formed few intimate friendships, but these were lasting ones. The story of his life is simple and colourless, the outstanding event in it being his tour on the Continent with Horace Walpole, 1739–41. Their unfortunate quarrel, late in this tour, which was not healed for 3 years, was the only break in a lifelong attachment. Returning to England, G. found his father dying and his mother only moderately provided for. After residing with her for a while at Stoke Poges he went back to Cambridge, where, except for brief intervals, he spent the rest of his life. There he became a fellow of Peterhouse and, later, transferred himself to Pembroke College. He had always a tendency to melancholy, the best cure for which would have been plenty of exercise and cheerful company; of the former, however, he took little, and the latter he was too reserved to enjoy freely. Yet he was naturally very humorous, and his letters, charming in their mixture of fun, sincere friendliness, and wise criticisms of men and books, are worthy to stand with those of Lamb. His learning was immense, not only in the classics, but also in art and natural science. He holds an honourable place in Eng. literature, though his works are small in quantity, and in quality do not attain the highest rank, even the immortal *Elegy* owing its fame to exquisite expression and natural pathos rather than to greatness or originality of thought. But if this, the Odes, and the trans. from the Norse be compared with anything written by his immediate predecessors (except Thomson), it will be seen that G. was a pioneer, a true poet in a prosaic age, and the forerunner of Goldsmith and Cowper in breaking away from the monotonous artificiality of early 18th-cent. verse. No wonder that Johnson, who condemned *Lycidas*, failed to appreciate *The Progress of Poesy* and *The Bard*, but it is quaint to find the author of *Rasselas* complaining of the 'cumbrous splendours' of G. and elsewhere of his 'dullness.' Other contemporaries called him obscure. G. was one of the first to celebrate the glories of mt scenery. While other writers were still shuddering at 'horrid precipices' and 'frightful solitudes'; he was enthusiastic in his admiration of the Alps, and later of the Grampian and Cumbrian peaks. His works were ed. by E. Gosse, 1884; his letters by P. Toynbee and L. Whibley, 1935. See *lives* and *studies* by E. Gosse, 1889; W. H. Hudson, 1911; W. P. Jones, 1935; Lord David Cecil, 1945; and R. W. Ketton-Cremer, 1955.

Gray, Fr. tn in the dept of Haute-Saône, E.E. 6—E

on the Saône. It is a busy riv. port, and has an agric. market. Pop. 5800.

Grayling (*Thymallus*), fresh-water fish of the salmon family, having a long many-rayed dorsal fin. It is found in the N. of Europe, Asia, and North America. The Brit. G. generally inhabits rivs. with rocky or gravelly bottom, and is in best condition when trout are out of season.

Grayling Butterfly (*Hipparchia semele*), butterfly widely distributed over the Brit. Isles. It has dark brown wings with 2 black eye-spots on each of the forewings and 1 black eye-spot centred with white on the hind wings. It is found on heaths and in dry stony places, especially on chalk and in clearings in woods.

Grays, see THURROCK.

Gray's Inn, see INNS OF COURT.

Grayson, David, see BAKER, RAY STAN-NARD.

Graz (Grätz until 1843), Austrian tn, cap. of the prov. of Styria, on the Mur. Sev. times menaced by the Turks in the 15th cent., it suffered also in the religious troubles of the 16th cent. It is the second city of Austria, is finely laid out with gardens and parks, and is overlooked by the 350-ft-high Schlossberg, once fortified, with its 16th-cent. clock-tower. It is the seat of a bishopric, and has a univ. (1586), technical and music schools, museums, and libraries. There is a Gothic and Baroque cathedral, a Renaissance prov. assembly house (Landhaus), and many fine churches. The tn was damaged in the Second World War. There are engineering, chemical, and paper industries. Lignite and iron are found in surrounding dists. and there are hydroelectric plants. Pop. 226,450. See G. Fels, *Graz und seine Umgebung*, 1897.

Graziani, Rodolpho, Marchese de Neghelli (1882–1955). It. soldier and colonial administrator. Served in Eritrea from 1908 to 1913; in Libya, 1914. Held an infantry command in Macedonia in 1919. Served in Tripolitania for the next 8 years. Took part in the occupation of Fezzan; general of div., 1928. Commander of the forces in Libya, 1930–4, conducting operations which resulted in the occupation of the Kufra oasis and in the final pacification of the colony, which latter he accomplished with great brutality. Governor of It. Somaliland, 1935–6. Hon. governor of It. East Africa, 1938. Commander-in-chief of the It. Libyan forces, 1939. When Italy declared war on Britain and France in 1940 he advanced from Benghazi to the invasion of Egypt, the Brit. forces, vastly outnumbered, falling back slowly to Mersa Matruh. G. in his advance, built a series of powerful fortifications all the way to Sidi Barrani. In the winter of 1940–1 Gen. Wavell, commanding the Brit. forces, suddenly turned to the attack and inflicted on G. one of the most spectacular defeats in the hist. of warfare. G. endeavoured to disclaim responsibility by placing before the It. supreme war council the actual orders sent to him by Mussolini for the conduct of the campaign, contending that in a series of dispatches he had opposed in the

strongest terms the entire strategy conceived by Mussolini. He resigned in Mar. 1941. After Italy's surrender in 1943, G. became defence minister in Mussolini's republican gov. In 1945 he surrendered to the Americans and was imprisoned on Procida Is. until 1946, when he was handed over to the It. Gov. for trial. He was tried in 1948 and in 1950 sentenced to 19 years imprisonment. Remissions and the time already served resulted in release after a period of 3 months.

Grazzini, Antonio Francesco (1503-84), It. poet and dramatist, founder of the *Accademia degli Umidi* (Florentine Academy), 1540, assuming the name 'Il Lasca' (mullet, or barbel). He was also later chief founder of the *Accademia della Crusca*, 1550, formed to perfect the Tuscan language. His works include a collection of tales in the style of Boccaccio's *Decameron*—*La prima e la seconda Cena* (selections appearing as *Le Cene*, 1756); sonnets, satirical poems, and comedies: *La Gelosia*, 1568; *La Spiritata*, 1561; *I Parentadi*, *La Pincochera*. His works were considered 'testi di lingua' by the Della Cruscan Academy. See P. Fantani, 'Vita del Lasca' in *Le Cene ed altre prose*, 1857; M. v. Wolff, *A. F. Grazzini*, 1913.

Grease, see HORSE (DISEASES).

Great and Little Bear, see URSA MAJOR and URSA MINOR.

Great Australian Bight, see AUSTRALIAN BIGHT.

Great Badminton, see BADMINTON.

Great Barrier Island, or *Otea*, is. of New Zealand, about 20 m. long, on the E. coast of North Is. To the W. is a small is. known as Little Barrier Is.

Great Barrier Reef, series of coral reefs off the E. coast of Australia, about 1250 m. in length. In its widest part it is 100 m. broad and is 150 m. from the coast, but towards the N. it comes nearer the land, and in some places is only 10 m. distant. The reef can be seen at low tide, but can always be distinguished by the breakers which wash over it. It is not continuous but is broken up by many deep channels, the chief of which are the Bligh entrance, the Olinda entrance, the Raime entrance, and Flinders passage. The channel between the reef and the coast is a valuable route of communication for steamers owing to the calmness of the sea, but careful navigation is necessary, especially at night, when the reef can scarcely be discerned; hence sailing vessels only use the route by day. The most valuable products of the reef are pearls, pearl shells, and trepangs.

Great Basin, large region of drainage in the U.S.A., which includes nearly all Nevada and parts of Utah, Idaho, Oregon, and California, and lies between the Sierra Nevada on the W. and the Wasatch Mts on the E. Mts run from N. to S. of it, and rise to a height of 4000 ft above the plateau. The soil is fertile where irrigation can be applied, but the hills are barren. It has numerous lakes, most of which are salt, the chief being

Great Salt Lake, Lake Utah, Lake Sevier, Lake Walker, and Lake Carson. The mts are rich in minerals, especially silver ore.

Great Bear Lake, see BEAR LAKE, GREAT.

Great Britain, name in general use for the is. that contains England, Wales, and Scotland, together with the adjacent small is., such as the Isle of Man and the Isle of Wight. It is thus the larger part of the U.K. of Great Britain and Northern Ireland and the centre of the Brit. Empire. Its official use dates from 1603, when James I united the crowns of England and Scotland and called himself king of G. B. But, the constitutional use of 'Great Britain' as the title of the U.K. dates from the Act of Union, 1707, by which the Eng. and Scottish Parliaments were united and the commercial advantages of England thrown open to the Scots, while the estab. Church of Scotland and the Scottish laws and judicial procedure were secured. Descriptions of the adjacent is. are to be found under their respective names. General geographical descriptions of the terrain will be found in the articles on England, Scotland, and Wales (q.v.), together with accounts of climate, pop., industry and occupations, historical monuments, and flora and fauna. Since the communications system of G. B. forms a network covering the whole of continental Britain, a short general account is given here; following the sub-section on ports of G. B., a brief description of the values of imports and exports and the classes of goods involved (figures to the nearest £100,000) is given. Cross-references to articles elsewhere in this encyclopaedia which cover the general headings of G. B.'s defence, educational system, economy and finance, gov. and administration, housing policy, judicial and legal system, religion, social welfare, and the arts will be found at the end of this article.

COMMUNICATIONS.—*Inland Transport:*

(a) Road. There are some 187,040 m. of public highway distributed throughout G. B., classified as I, II, or III, or (if of purely local importance) unclassified. Trunk roads, being of national importance, are maintained by ann. grants from Parliament, and the same source also contributes a proportion of the cost of maintenance of Class I, II, and III roads, the rest being found by local authorities. In Feb. 1955 it was announced that the gov. would spend £147 million on the roads in the next 4 years (with complementary expenditure of £20-£30 million by local highway authorities. For the various forms of road transport in G. B., see BUSES AND COACHES; MOTOR TRANSPORT, COMMERCIAL; TRAMWAYS; see also HIGHWAYS; ROADS; ROAD SAFETY.

(b) Railways. Nationalisation of railways in G. B. was brought about under the terms of the Transport Act, 1947; a centralised organisation (Brit. Railways) was to operate in 6 regional groups. In 1953 a second Transport Act was passed with the object of decentralisation and the administration of the railways by

areas under chief regional managers. There are at present some 19,150 m. of railroad (including electrified) and 51,481 m. of track. Waterloo Station, London, terminus of the SW. main and suburban lines, S. Region, is the largest station in the country. *See RAILWAYS, British Railways*; *see also* BRITISH TRANSPORT COMMISSION; LONDON TRANSPORT EXECUTIVE.

(c) Canals and Inland Waterways. In G. B. some 2200 m. of inland waterways exist; 266 m. have been closed and 486 m. are no longer used commercially. Of the total mileage, some 2172 m. are in the charge of the Brit. Transport Commission, 1750 m. being open to traffic. Canals may be broad waterways (i.e. canalised rivs.) or narrow (i.e. canals in the interior.) Inland waterways in England and Wales are grouped for administration into 4 divs.: North-East (Humber and Ouse rivs. and associated ports); North-West (Mersey estuary and associated ports, including Hull via Leeds); South-West (Severn estuary with associated ports); and South-East (Thames estuary, giving access to the Port of London and the Midlands). Scottish canals are administered separately; they comprise the Caledonian Canal, the Crinan Canal, the Forth and Clyde Canal, and the Union Canal, and are broad waterways. *See also* CANALS.

(d) Aviation. Since 1919 civil air transport has been available from the U.K., and to-day internal air services are operated (some on a seasonal basis) between most of the prin. ts. of the Brit. Isles. A helicopter service between London Airport and the centre of London began in July 1955, and an airport-to-airport experimental service was tried out for 11 months (1954-5) between Eastleigh (Southampton) and London airports. *See* AVIATION, CIVIL.

Ports. There are over 300 ports in the U.K.; the prin. Eng. ports are as follows. (1) Port of London, with 69 m. of waterway and over 4000 ac. of dock estate, handles the second largest amount of ann. tonnage in the world. Every form of product is imported, and though Greater London and the Home Cos. receive a great proportion of these imports they are also distributed from London throughout the country. (2) Liverpool (linked to Manchester by the Manchester Ship Canal) serves chiefly the Midlands, Lancs, and Yorks. Grain and tobacco are among the many commodities imported into Liverpool; raw cotton is Manchester's prin. import. (3) Southampton, the biggest Channel port, is important as the prin. Eng. port for ocean passenger traffic (though Liverpool also has some passenger traffic). Oil for the Fawley refinery is also dealt with through Southampton. (4) Newcastle upon Tyne and other Tyneside ports serve the NE. and from them coal is shipped. (5) Hull serves industrial Yorks and the Midlands; Middlesbrough, serving the local iron and steel industry, imports iron ore and exports iron and steel. (6) Bristol and

Avonmouth serve Bristol's industries and the Midlands. Swansea is the prin. Welsh seaport, exporting coal, steel, and tinplate, and importing and exporting oil for local refineries. Glasgow is the prin. Scottish seaport serving the industrial area in and around the Lanarkshire coalfields. The Brit. Transport Commission (q.v.) administers certain ports which prior to nationalisation belonged to the railways; these include Southampton (docks only), Hull, Middlesbrough (docks only), Harwich, Folkestone, Newhaven, and Holyhead (North Wales). London is controlled by the Port of London Authority (q.v.). Bristol port is owned by the city council. *See* articles on the individual ports mentioned; *see also* COASTING TRADE; DOCK; HARBOUR; MERCANTILE MARINE; SHIPS and SHIPBUILDING.

IMPORTS AND EXPORTS.—Total imports for the whole of the U.K. in 1955 were valued at £3,886,100,000, composed of food, beverages, and tobacco, £1,443,600,000; basic materials, £1,123,800,000; manufactured goods, £894,200,000; mineral fuels and lubricants, £409,600,000; miscellaneous, £14,900,000. Exports were valued at £2,905,500,000, the largest class being manufactured goods, £2,387,700,000. Re-exports were valued at £118,700,000, and retained imports were thus worth £3,767,400,000. Imports (1955) were principally from the Commonwealth (£1,790,700,000), the sterling area (£1,573,000,000), non-sterling O.E.E.C. countries and dependencies (£952,700,000), and the dollar area (£842,600,000). Exports (1955) were principally to the sterling area (£1,430,800,000), the Commonwealth (£1,415,000,000), non-sterling O.E.E.C. countries and dependencies (£759,600,000), and the dollar area (£397,300,000). Re-exports were principally to non-sterling O.E.E.C. countries and dependencies (£57,300,000). Recently growing industrial investment has strengthened the exporting power of the U.K.

The prin. imports of 1955 were petroleum and petroleum products; meat; non-ferrous base metals; cereals; fruits and vegetables; coffee, cocoa, tea, and spices; wood and cork; wool; metalliferous ores and scrap; dairy products; chemicals; pulp and waste paper; and cotton. The prin. exports were non-electrical machinery; road vehicles and aircraft; chemicals; electrical machinery; metal manufs.; iron and steel; woollens, worsteds, and wool tops; and cotton yarns and fabrics. Britain exports more radioactive isotopes for medical, industrial, and agric. use, than any other country.

The rest of the article is exclusively historical and deals with the hist. of G. B. from the accession of George I (q.v.) in 1714 as a convenient point from which to commence the hist. of the nation. For the hist. of England prior to 1714, *see* BRITAIN, ANCIENT; BRITAIN, ROMAN HISTORY OF ENGLISH HISTORY; and for Irish, Scottish, and Welsh hist., *see* subsections under IRELAND, SCOTLAND, and WALES.

HISTORY.—The Protestant succession in 1714 was the final step in the revolution of 1688, the vindication of the principles of Protestantism, and the selection, in fact if not in theory, of the monarch by Parliament. Further, it marked very distinctly a new era in the constitution. The king was a foreigner and a figure-head; the real power tended to pass, therefore, from the hands of the Crown into the hands of the Parliament, and during the 18th cent. that meant that the power remained in the hands of the great Whig families. These families had been responsible for the revolution of 1688 and for the peaceful succession of George I, but they were inspired by no feelings of loyalty, rather they regarded the matter as a financial speculation, and supported the Hanoverians because, whilst a Protestant sat on the throne, their funds were safe.

The first notable event during the reign of George I was the Jacobite rebellion of 1715, which was fundamentally of little importance and which hardly stirred the absolute apathy of the nation. During that rebellion the Septennial Act was passed, prolonging the duration of Parliament to 7 years instead of 3. This was obviously an Act passed in order to prevent an election during these troublous times, and was but a temporary expedient. It lasted, however, down to the passing of the Preamble to the Parliament Bill of 1910, which reduced the duration of Parliament to 5 years. One important development also began to take place. The king no longer attended Cabinet councils; his place was taken by a first or prime minister. The system of party gov. had already been developing in the preceding century, but now the personal influence of the Crown began to lessen, though, as modern research has shown, this tendency, though apparent under the early Hanoverians, should not be exaggerated. The king's patronage was still a vital factor in gov., and was to remain so, except in times of acute stress, for several decades yet. The mania for speculation, which broke out during this reign and was really one of the results of the treaty of Utrecht, culminated in the South Sea Bubble, which broke, reducing many people in England to penury. The ministry could not entirely exonerate itself, but confidence was restored by the genius of Robert Walpole (q.v.). From 1721 to 1742 he really ruled the country. This period of office was a period of political tranquillity; nothing happened, affairs dragged themselves quietly along, other countries took part in wars, G. B. stood aloof and prospered. In 1727 George I d. and his son succeeded. George II (q.v.) had no love for Walpole, but, guided by his wife, he retained Walpole in office. In 1739, however, Walpole, much against his will, declared war with Spain, 'the war of Jenkins's Ear,' which ran on into the war of the Austrian succession, and in 1742, finding his majorities continually dwindling, he resigned. It is important to notice during this century that in every war

which G. B. fought the country was either in direct opposition to France or ranged amongst the allies opposed to her. Also the wars were no longer European wars solely, but had become struggles for colonial and maritime supremacy. The European wars were repeated in India and America, and often even, when the 2 countries were at peace at home, war was going on in the colonies.

During the war of the Austrian succession the final Jacobite rising took place. Again it illustrated the apathy of the country at large, but this time, owing to more efficient leadership, G. B. was invaded and the Young Pretender reached Derby. But from Derby the Pretender had to retreat and was finally defeated at Culloden, and after many adventures fled the country. At the battle of Dettingen in 1743, for the last time, a Brit. sovereign led his troops in person. The war of the Austrian succession ended with the treaty of Aachen (1748), and 8 years later began the Seven Years War. During this war Wm Pitt the Elder (q.v.) became minister for war, and owing to his genius the war was the most successful that G. B. had yet waged. He set himself to conquer India and America on the plains of Germany. During this war G. B. definitely estab. the beginnings of an empire in India, and Canada also passed into her hands. France had been defeated in both countries. Before the end of the war George II d. He was succeeded in 1760 by his grandson, George III, eldest son of Frederick Prince of Wales, who had predeceased his father. George III (q.v.) was the first Hanoverian ruler who proudly proclaimed that he gloried in the name of Briton. Before he had been on the throne long Bute, his tutor, was in possession of the premiership. Pitt had resigned and a peace had been signed by which G. B. obtained much, but probably not so much as would have been obtained with a more competent man at the head of affairs. The early part of the reign resolved itself into a struggle between the king and the Whigs. The king desired to reassert his personal rule, and this he ultimately did, though in practice only for a relatively short period. One of the indirect results of the cession of Canada to Britain was the outbreak of war with the Amer. colonies. The Eng. Parliament declared itself capable of taxing the colonies. The colonies protested that taxation went with representation. The gov., under Grenville, remained obstinate; the king regarded the colonists as rebels from the first. Conciliation was tried, but it was useless conciliating with one hand and irritating with the other, and finally, in 1775, war broke out and in the following year the Americans declared their independence and became a rep. By 1778 the war was extended and G. B. found herself fighting practically the rest of Europe. In America she was defeated at Yorktown, and the surrender of Cornwallis there in 1781 sealed the fate of America. Against France and Spain she was more successful, and the victories

of Rodney in the West Indies and the failure of the Spaniards to recover Gibraltar enabled G. B. to salvage something from the war, but, nevertheless, she was at a lower pitch of power than she had reached before in the century. America's independence was recognised. The disasters of the Amer. war put a period to the personal power of the king, although he was still able to influence events by the use of the body of politicians known as the 'King's Friends.'

peace with France had never been so secure. Then, in 1793, Louis XVI was executed and the international treaties of Europe were torn up by France. But the enthusiasm of the revolution calmed down, the natural genius of the people slowly returned, and step by step they were led by Napoleon (q.v.) until the rep. became a consulate and then an empire. But the menace of imperial France was even greater than that of republican France, and certainly it is largely due to



THE BATTLE OF CULLODEN, 16 APRIL 1746

This contemporary coloured engraving, reproduced by courtesy of the Parker Gallery, 2 Albemarle Street, London, bears the following description: 'This View of the Glorious Victory obtained over the Rebels; Shews His Majesties Army commanded by His Royal Highness the Duke of Cumberland, drawn up in 3 Lines: the Front consisting of Six Battallions of Foot, the Second of 5, the Third was a Body of Reserve, composed of 4. Part of the Highland Army is here represented as furiously attempting with Swords and Targets to break in upon the left of the Dukes Front Line, where their rashness met with its chastisement from the Fire and Bayonets, of Barrels and Munro's Regiments. The right wing of the Rebels being covered by a Stone Wall, Kerr and Cobham's Dragoons under Hawley and Bland, are described as passing through a breach made for them in it, to attack the rear of the Rebels, which put them into confusion. Kingstons Horse wheel'd off by the right of the King's Forces, and falling on the left of the Rebels met our Dragoons in their center, which began the total rout of these disturbers of the Public Peace.'

That series of changes in the economic world usually known as the industrial revolution began to be apparent at about this time. The fiscal system was altered; the influence of Adam Smith's (q.v.) *Wealth of Nations* was felt; free trade began to be seriously spoken of; parl. reform found some bold and strenuous advocates, and then came the greatest event of all—the Fr. Revolution. For over 4 years that revolution remained disregarded by G. B., save in as far as it found some supporters but more enemies. The peace of Europe was held to be unaffected by it. Pitt himself declared the year before the outbreak of war that

the fact that it was impossible to invade and conquer G. B. that Europe was saved. Waterloo decided the fate of Europe, and Napoleon was sent to the is. of St Helena. Undoubtedly the victory had been due to a very great extent to the economic resources of G. B.; without her manufs. even her enemies could not exist.

G. B. had begun to change from an agric. to an industrial nation. The new manufs. had led to new roads and new means of transit; it was obviously necessary to obtain quick transit for goods, and necessity was the mother of invention. Roads were better constructed, canals were made all over the

country, and finally came the steamship and the steam-engine. The period which followed the war was one of great internal stress. (See under INDUSTRIAL REVOLUTION in GREAT BRITAIN.) The new machinery was attacked by those made unemployed by its introduction, and the increasing numbers of soldiers returning from the war made affairs worse. In 1819 riots broke out, and at Manchester the mob was charged by the military and a number of the rioters were killed; this event is known as the Manchester massacre or Peterloo. In the meantime the demand for parl. reform had continued sporadically, but the revolution had stopped all chance of immediate reform. Anything savouring of reform was regarded as revolutionary, and anything revolutionary was anathema to the vast majority of the people of the country. Catholic emancipation had been promised at the time of the Union (1800) (see IRELAND, *History*), but the king had refused to hear of it, and Pitt, rather than break his promise to the Irish, resigned. The king, who had now for some considerable time been incapable of ruling *d.* In 1820, weak, old, blind, and insane, his son, the prince regent, became king as George IV (q.v.).

The death of George III in 1820 was in itself unimportant. But it marked the end of an era. There was more material progress in the 19th and early 20th cents. than in most of the preceding 10th. of the world. Constitutional and social changes were to be equally sweeping; within 130 years of George III's death G. B. was to have become a democracy in a sense fuller than the most extreme reformers of his age can have believed either possible or desirable.

During the reign of George IV religious toleration became a real thing in spite of some violent opposition; the Test and Corporation Acts were repealed, and a Bill for the relief of the Catholics was passed. These changes seem nowadays but small and necessary; to the age which passed them they were practically revolutionary. It is necessary also to remember that the close of the Napoleonic wars had been followed by a reaction in almost every country in Europe, and yet, in spite of this, many enlightened measures were passed in G. B., even by govts. usually considered repressive.

In 1830 George IV *d.*, and was succeeded by his brother, William IV (q.v.). The agitation for a parl. Reform Bill at last had its reward in the passing of the great Reform Act of 1832, to the aristocracy of the time the beginning of the end of all things. Slavery was abolished, a Poor Law was passed, legislation for the protection of the worker passed, and the abuses of bor. patronage and trading privileges began to receive that critical attention which was to result in the Municipal Corporations Act of 1835.

In 1837 William IV *d.*, and was succeeded by his niece, Victoria (q.v.), whose long reign witnessed so much change and material progress. The early years of the

young queen's reign saw the repeal of the Corn Laws and the Chartist agitations, together with the beginning of the great Irish question. Commercially G. B. was prospering and progressing by leaps and bounds. The great European wars had left her the workshop of the world, and for a time she had no competitors of any importance. Politically her progress was equally great, while the great parties still remained fairly true to the old ideas; nevertheless the Liberals, evolving from the Whigs, and the Conservatives, evolving from the Tories, were both being gradually tinged with the democratic spirit. The people were at last being recognised as a real factor in political existence, but this fact must not be over-estimated. The majority of the adult male pop. still had no parl. vote after 1832. The power of the Crown and of the landed proprietors was still very great indeed. But gradually from this period the power and prestige of the House of Commons increased, and its representative character was broadened, until it is now recognised as the greatest power in the legislature.

The Reform Bill of 1832 stands out as the great event of the ministry of Lord Grey, and before this ministry relinquished office they had attempted the reform of the Poor Laws and had introduced the first Factory Act. Melbourne had become Prime Minister in 1834. He was extremely popular with Victoria, who regarded him as her political mentor; but in 1841 he dissolved Parliament, and a Tory majority was returned. On the whole the ministry had not done a great deal; they had passed the Municipal Corporation Act, and had introduced penny postage, but their policy in Canada and Jamaica had been bad, and the zeal for further reform seemed to have left the Whig party. The prin. event of the ministry of Melbourne's successor, Peel (q.v.), was the repeal of the Corn Laws (1846), which overshadowed his other successes. The Irish famine forced his hand, and the head of a nominal Protectionist ministry introduced the greatest measure of free trade which the country had yet been given. Peel was almost immediately defeated on the question of a Coercion Act for Ireland, and resigned, never to hold office again. The Tory party was split by this measure, and the Peelites, chief among whom were Gladstone (q.v.) and Aberdeen, ultimately joined forces with the Whigs to form the Liberals, whilst the Protectionists, under Bentinck and Disraeli (see BEACONSFIELD), ultimately formed the modern Conservative party. Peel was succeeded by Lord John Russell, one of whose greatest difficulties during this period was the quelling of the Chartist riots. In 1851 Palmerston's (q.v.) somewhat high-handed methods of conducting affairs at the Foreign Office led to his resignation, and in 1852 he threw the ministry out by defeating them on the Militia Bill. The ministry was succeeded by Lord Derby's first administration, and this, after a short

period of office, was succeeded by a coalition ministry under the leadership of Lord Aberdeen. Its chief ministers were Aberdeen, Gladstone, Russell, and Palmerston. It lasted only for 3 years—whence Disraeli's historic remark, 'England does not love coalition.' During its tenure of office, however, Gladstone definitely abolished all the remaining protective duties, and G. B. became altogether a free trade country. Nevertheless this ministry's utter mismanagement

so bitterly attacked by many members of his own party that he resigned, and was succeeded by Lord Derby. In 1867 Disraeli introduced a Reform Bill, and, 'educating his own party' up to it, passed it. It was described by Lord Derby as 'a leap in the dark,' and contained many amendments accepted from Gladstone.

From 1867 almost to the end of the century the field of politics is dominated by the duel between Gladstone and Disraeli. Seldom have two statesmen of



THE REFORM BILL, 1867: 'A LEAP IN THE DARK'

A cartoon by Sir John Tenniel, reproduced by permission of the proprietors of *Punch*

of the Crimean war led to its overthrow in 1855.

During the next 10 years the outstanding figure in Brit. politics was Palmerston. After 2 years of office he was defeated, but appealed to the country and was returned by a large majority. Later, in 1858, his Conspiracy to Murder Bill was thrown out, and Lord Derby formed his second administration, which lasted for only 15 months, after which Palmerston again came into power. From this time until his death in 1865 Palmerston was supreme, and in the main his conduct of foreign affairs was to raise still further the prestige of the nation. In 1861 the Prince Consort *d.* Palmerston was succeeded by Lord John Russell, who attempted to pass a further parl. Reform Bill (a measure Palmerston had refused to countenance during his life-time), but was

such genius been opposed to one another, or been so entirely different in character.

In 1868 Disraeli became Prime Minister in succession to Lord Derby, but was defeated in the general election of that year and resigned before the end of the year. Disraeli was succeeded by Gladstone, who during the 5 years of his ministry passed more measures than almost any previous one. Education became compulsory, trade unions were legalised, the Ballot Act was passed. Under Cardwell the army was reformed, and the linked battalion method adopted. The Irish Church Act and a Land Act for Ireland were passed, but the state of Ireland at that time led to Coercion Acts. But the foreign policy of the gov. was decidedly unpopular, G. B.'s attitude towards Prussia during the Franco-Prussian war and towards the *Alabama* claims of the

U.S.A. being decidedly weak. In 1874 Gladstone resigned, and the Conservatives were returned to power, having for the first time since 1841 a real majority in the House of Commons. The ministry formed by Disraeli was a brilliant one, and the opposition was for a time weakened by the withdrawal into private life of Gladstone. The question of Home Rule was gradually forcing itself to the front, and the Irish tactics in the House became obstructive. It was at this time that Disraeli put forward his imperial policy, and the ministry is chiefly noticeable for its attitude on foreign and imperial affairs. The Bulgarian atrocities led to the intervention of Russia and to the Congress of Berlin, from which G. B. issued in 1878 with 'peace and honour.' Affairs in Africa and India also attracted much attention; the title of Empress of India was taken by the queen, and the majority of the shares of the Suez Canal became the property of G. B. In 1880, however, Disraeli was badly defeated at the polling booths and resigned. Gladstone now formed his second administration. He again remained in power for about 5 years. In 1880 the Boers were, after the defeat at Majuba, granted independence, and in 1885 the Egyptian question, which had necessitated the bombardment of Alexandria in 1882, was marked by the murder of Gordon at Khartoum. In 1881 the second Irish Land Bill was passed, and in 1884 the Reform Bill became law. In 1885 Gladstone resigned and was succeeded by Salisbury (q.v.), but he held office only for a short time. In 1886 at the general election the Liberals were again returned to power. Gladstone formed his third ministry, but his majority was dependent on the Irish. He determined, however, to introduce a Home Rule Bill, which led to grave dissensions in his own party. On a div. on the second reading he was deserted by Hartington, Chamberlain, and Bright, and was defeated by a majority of 30. He appealed again to the country, and was defeated. Lord Salisbury now formed his second administration.

From 1886 to 1906, broken only by a short administration of the Liberals, the Conservatives were constantly in power. The introduction of the Home Rule Bill had seriously split the Liberal party, and later, at the retirement of Gladstone, differences became still more marked. The dissident Liberals called themselves Liberal-Unionists, though they refused at first to co-operate with the Conservatives. In 1892 the Liberals succeeded to office, but after a second Home Rule Bill had been introduced and thrown out in the House of Lords, Gladstone finally retired and was succeeded by Lord Rosebery. In 1895 the Conservatives again came into power, and the Liberal-Unionists formed a coalition with them, the duke of Devonshire (Hartington), Lord Lansdowne, and Joseph Chamberlain accepting office. Chamberlain quickly made a name for himself as colonial secretary. In 1899 the Boer war broke out and was

concluded in 1902. In the same year, after the Conservatives had again been returned to power at the 'khaki' election (1900), Lord Salisbury d., and was succeeded by Balfour (q.v.). Queen Victoria, who had celebrated her diamond jubilee in 1897, d. in 1901, and was succeeded by her son, Edward VII (q.v.). During Balfour's administration the highly controversial Education Act was introduced, and in 1903 Chamberlain put forward the Tariff Reform scheme which succeeded in breaking up the Conservative party and led to the overwhelming Liberal victory of 1906. Campbell-Bannerman formed the new administration, and was succeeded shortly before his death by Asquith (q.v.) (1908). Edward VII d. on 6 May 1910, and was succeeded by his eldest surviving son, George V (q.v.). The rejection of the budget in 1909 by the House of Lords led to the introduction of the measure for the curtailment of the power of that House, and after a conference of the parties had failed, the Parliament Bill of 1911 was introduced and finally, after a great struggle, passed, since the Prime Minister obtained from the king a promise to create enough peers to swamp the Tory majority in the House of Lords if the Bill were thrown out. Asquith's ministry continued until 1915 as Liberal and continued as Coalition Gov. until 1916.

G. B.'s entry into the First World War (q.v.) on 4 Aug. 1914 subdued political differences, but the Home Rule Bill and the Welsh Church Bill became law automatically, being the first measures to be passed under the new Parliament Act (q.v.). In 1915 a Coalition Gov. was formed comprising 12 Liberals, 8 Conservatives and Unionists, 1 Labour member, and Lord Kitchener. Legislation was passed to lessen any danger to war efficiency at home, especially with respect to war munition centres. In 1916 the Conscription Bill was passed. In April 1916 Irish volunteers in Dublin, during what appeared to be a holiday parade, seized the prin. buildings, and a serious conflict with the regular troops took place. The rising was an expression of Sinn Féin (q.v.) hostility to the Brit. Gov. Civil war was proclaimed, destined to end, eventually, in the formation of the Irish Free State, and, subsequently, of the Irish Rep. The death of Kitchener at sea left the war secretaryship vacant, and Lloyd George succeeded him. Zeppelin raids having taken place, lighting restrictions were enforced to minimise the conspicuousness of large tns. A food controller (see FOOD CONTROL), was appointed, and in Dec. Lloyd George

Cabinet (see CABINET, IMPERIAL WAR), while the Whitley Councils were set up under the chairmanship of J. Whitley as a step towards industrial peace. The protraction of the war by this time caused a system of 'rationing' of essential foods. At the end of the session (Feb. 1918) the

People's Representation Bill was passed by which all men of 21, and women of 30, with residential or business qualifications, were given the franchise. Early in the same year the House of Lords gave its approval to the principle of the League of Nations (q.v.). In Nov. 1918 the war ended.

Parties returned to their old distinctive groups, though for the time being Lloyd George remained supreme, seeming to dominate every party of importance. The Labour party came back with greatly increased strength and challenged the Liberal position as the official opposition. Irish Nationalists practically disappeared, while the 73 Sinn Féiners refused to take their seats, among them being Countess Markievicz, the first woman M.P. Industrial problems soon became acute. The Miners' Federation called for nationalisation of mines, and formed with railwaymen and transport workers the Triple Alliance. The Sankey coal commission settled the wages difficulty and recommended nationalisation, though its recommendation was not to be adopted for another quarter of a century. On 28 June 1919 the peace treaty was signed. During the year an industrial court (see CONCILIATION) was set up, composed of employed and employers, to settle trade difficulties. But Irish affairs continued to dominate domestic politics. A form of guerilla warfare had developed. Martial law was proclaimed in many of the S. Irs. With the intervention of Smuts in the following year a more favourable stage was reached, and eventually a truce was arranged, and Ireland was granted Dominion Home Rule. (See also HOME RULE; IRELAND.) In 1922 confidence in the Coalition Gov. diminished, a general election took place, and a Conservative ministry under Bonar Law was returned to power. Labour became the second party in the House. The Conservatives, however, had no clear majority, and on Baldwin's fiscal policy another general election occurred, resulting in a stalemate.

At the general election the following year the Labour party assumed office under Ramsay MacDonald. In Feb. the gov. formally recognised the U.S.S.R. As foreign secretary MacDonald enhanced his reputation over his conversations with France respecting the Dawes reparations plan (see DAWES PLAN). But the gov.'s insecurity by this time had led to defeat, and once again a general election had to be faced. The notorious 'Zinoviev Letter', alleged to have come from Russian Communists demanding propaganda among Brit. Socialists, affected the election, and the Conservatives, under Baldwin, were returned to power with a large majority. In industry class feeling had become bitter. The phrase 'class war' appeared in trade union literature. Unemployment gave rise to increasing alarm. In the coal industry many mines were closed and many areas were reduced to destitution, especially in South Wales and in the N. of England. Meanwhile the Locarno Treaty (q.v.) was signed, and

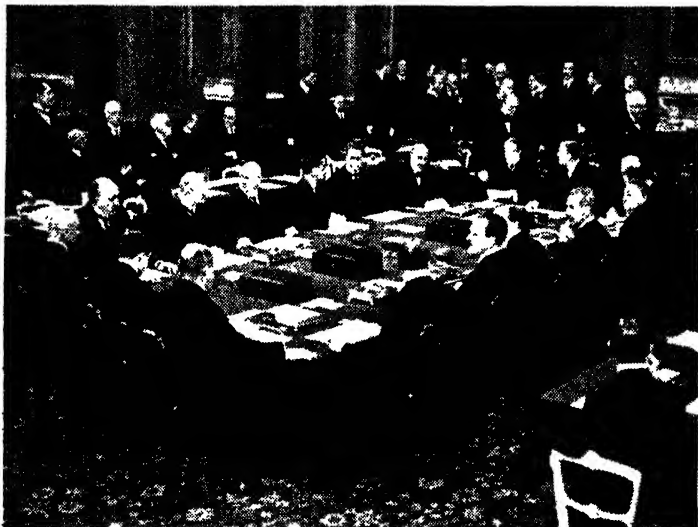
Germany was free to enter the League of Nations. In 1926 fresh concern was caused by events in the coal industry. Negotiations having failed a general stoppage resulted, which led to the general strike (see STRIKE, GENERAL). The Emergency Powers Act of 1920 was invoked and the gov. took control of necessary supplies. Eventually the strike spread to the railways, transport workers, newspapers, and iron and steel trades. Two and a half million men ceased work. By the time it was called off £30,000,000 had been lost. Various expedients were tried to mitigate unemployment, among them the Industrial Transference Board, by which men were transferred to likely areas, and training schemes. Churchill's budget of 1928 was notable for its de-rating scheme, a policy of granting rating relief to depressed industries. The gov.'s Trades Unions Bill aroused fierce opposition from its Labour critics. By it a general strike was declared to be illegal, but in spite of violent criticism it became law. Nation-wide interest was aroused later by the proposed revision of the Prayer Book. Parl. sanction was sought for its voluntary adoption. The measure was thrown out amid acrimonious hostility. In agriculture a further anxiety beset the gov.: the industry demanded gov. aid, and, receiving none, voiced its grievances with an emphasis which had its effect on the subsequent general election.

The beginning of 1929 saw political struggles overshadowed by the serious illness of the king, who was successfully operated on for pleurisy. The gov.'s Franchise Bill, whereby women received the vote at 21 (see ELECTIONS), and a desire for safeguarding duties among its supporters, led to a general election. Labour returned to office, though without a working majority. Awaiting the new gov. were unemployment, new treaties with Russia and Egypt, and the ratification of the Anglo-Amer. naval pact, sponsored by F. B. Kellogg. By Aug. relations with Egypt were amicably settled, and the acceptance of the Young plan of reparations at the Hague coincided with the evacuation of the Rhineland (q.v. and see also REPARATIONS), and Ramsay MacDonald successfully terminated conversations with Hoover, thus accepting the Kellogg Naval Pact (see also LONDON CONFERENCE).

G. B.'s financial and economic situation had by now deteriorated in a marked degree, the unemployment figures reaching over 2,800,000 in 1931, while a budget deficit of £40,000,000 was shown to be imminent. Actually the Labour Gov. went out on the issue of a low tariff on imports and was succeeded by a Coalition or National Gov. of all parties under Ramsay MacDonald, one of the first acts of the new gov. being the abandonment of the gold standard in order to avert the collapse of the £. After the National Gov. (q.v.) had been returned a second time and by a great majority, Neville Chamberlain, chancellor of the exchequer,

reversed the country's traditional free trade policy by introducing the Import Duties Bill, 1932, under which Britain's fiscal policy became definitely protectionist. The same year saw the passage of the now historic Statute of Westminster (q.v.), which, by giving extra-territorial operation to the legislation of the Parliaments of the self-governing dominions, in effect

was now overshadowed by considerations of foreign policy and the exigencies of national defence. In the Far East Japan's expansionist ambitions had their repercussions in G. B.'s naval policy; while Mussolini's designs in Abyssinia, with their implicit threat to Brit. interests in the Near East, involved in the Brit. Gov.'s view a discussion of G. B.'s



Topical Press

THE SIGNING OF THE LOCARNO TREATY IN THE GRAND ASSEMBLY ROOM
OF THE FOREIGN OFFICE, LONDON, 16 OCTOBER 1925

Seven representatives of the subscribing powers put their signatures to the historic document in the Grand Assembly Room at the Foreign Office. Left to right, starting with Mr Baldwin, Prime Minister, at the top table, are Sir Austen Chamberlain, foreign secretary; Sir Cecil Hurst, legal adviser; Mr M. W. Lampson; M. Briand, French Premier; M. Berthelot; Dr Beneš, foreign minister, Czechoslovakia; Count Skrzynski, Prime Minister, Poland; M. Prezabieik; M. Vanderveldé, foreign minister, Belgium; M. Rolin; Herr Kempner; Herr von Schubert; Herr Stresemann, foreign minister, Germany; Dr Luther, Prime Minister, Germany; Marquis Medici; M. Pilatti; Signor Scialoja, Locarno delegate. Behind Mr Baldwin is Mr Winston Churchill

rendered those countries independent of G. B. for all purposes. By now the nation's financial outlook had so far been redressed as to show a budget surplus in 1932 of over £31,000,000. But no appreciable decline in unemployment came until 1934; by 1936 unemployment showed a further decline in consequence of the improvement in the iron and steel industry—which had been under a cloud ever since the close of the First World War—through the gov.'s plans for rearmament in reply to Hitler's policy in that direction. Domestic policy indeed

obligations under the Covenant of the League. The policy of economic sanctions against Italy effected nothing owing to the backward state of Brit. rearmament, and merely served to embitter relations for some years between the It. and Brit. peoples (see further under ETHIOPIA). At this juncture Sir Samuel Hoare, Brit. foreign secretary, and Laval, Fr. premier, concluded a pact by which Italy was to receive substantial concessions at the expense of Abyssinia. The Brit. Cabinet, however, repudiated the pact, and Hoare was replaced by

Eden (q.v.), a minister who was also destined to suffer temporary eclipse until the outbreak of the Second World War.

The year 1935, the silver jubilee of George V, was celebrated in May amidst great enthusiasm; but in the next year the king *d.* at Sandringham (30 Jan.) and was succeeded by Edward, prince of Wales, as Edward VIII (q.v.). The new king reigned for less than a year, abdicating on 10 Dec. 1936, uncrowned, in consequence of his proposed marriage to Mrs Ernest Simpson, an Amer. citizen whose 2 previous marriages had ended in divorce. He left England immediately afterwards and married her in France the following year.

Early in 1936 the international situation underwent further serious deterioration through Germany's denunciation of the Locarno Treaty. Italy had by now completed the conquest of Abyssinia. G. B. at last began to carry out rearmament on a larger scale, her existing forces, particularly in the air, being totally inadequate to ensure any respect from the European dictators; but the pace remained slow, and popular feeling in the country remained as a whole blindly pacific. Germany seized her chance to occupy the demilitarised Rhineland zone, while the rest of the world looked on, apparently indifferent to Germany's fast-growing military strength and openly expressed territorial ambitions.

During 1937 the international situation appeared to be steadily growing worse. The desire of the nations for collaboration with one another was often expressed and as often frustrated. Two wars were in progress—the Sino-Jap. war and the Sp. civil war. Japan and Germany had both left the League of Nations before the year ended. Had G. B. at that time had a stronger Prime Minister the fatal policy of appeasement might not have been continued and the rate of rearmament could have been to a great degree accelerated. But the repeated warnings by Churchill (q.v.) of the growing Ger. menace fell on unwilling ears in the Commons and the public was apathetic. Regarding the civil war in Spain, the Brit. Gov. pursued the policy with France of 'non-intervention' and, at the same time, strove unsuccessfully to bring about the withdrawal from Spain of It., Ger., and Russian 'volunteers'—representing the rival ideologies of Fascism and Communism. It was recognised that the way towards appeasement through the approach of G. B. and France to Germany would be long and difficult, yet under the lead of Neville Chamberlain (q.v.), who had now succeeded Baldwin (q.v.) as Prime Minister, the hope of accomplishing something practical by these means was not abandoned; and indeed Chamberlain held on his course even to the humiliating meeting with Hitler and Mussolini in 1938 at Munich where, even if his policy later became extremely unpopular in the country as a whole (at the time he was welcomed back to England as a national hero) he did undoubtedly postpone war

for a year during which some of the leeway in rearmament might have been made up. Almost equally problematic, too, were Brit. and other foreign interests in China. In this year the coronation of King George VI (q.v.) was solemnised at Westminster Abbey (12 May)—an event which announced, in anxious moments, the unanimous intention of the Brit. Commonwealth to stand, through the renewal of this ancient symbolism, by its well-tried institutions and traditional loyalties. Another event at this time of importance to Brit. interests was the conference of imperial Prime Ministers, which took place in London in the month of the coronation. The year closed with the country much more united on the main issue of rearmament. To raise the means to this end the rate of income tax was increased. But the Ger. pace of rearmament continued to draw further ahead of the Brit. effort. In the sphere of domestic legislation a notable social reform was the Matrimonial Causes Act, which enlarged the grounds for divorce (*see* DIVORCE).

The threats to the peace of the world, which had thrown their shadow over the close of 1937, grew rapidly more imminent and more specific in 1938, and the year was marked by successive crises, each passed without universal catastrophe, but always leaving a sense of heavy foreboding. Hitler assumed command of all the armed forces of the Reich, thus proclaiming the restoration of Germany to her full military strength and her reliance upon that strength in seeking a remedy for her grievances. Early in the year Eden, foreign secretary, left the gov. of Neville Chamberlain owing to a difference of opinion with the Prime Minister over Anglo-It. relations. Events were by now moving too swiftly for conciliatory action, and, by the beginning of Sept., all the great powers of Europe were ranging themselves for a conflict more terrible than that of 1914. The arrogance of the Ger. Gov. over the Czech frontiers (*see* CZECHOSLOVAKIA) seemed to make war inevitable and, as France had guaranteed Czech integrity and G. B. stood pledged for the ultimate security of France, G. B. was immediately involved. But in Sept. Chamberlain, now a man of 70 years of age, resolved to make an unprecedented personal effort to avert the catastrophe. Travelling for the first time in his life by aeroplane, he sought a direct interview with Hitler in his home at Berchtesgaden and followed this journey by 2 other flights to Germany in order to secure the acceptance of a plan agreed upon with France, which, in effect, called upon Czechoslovakia to make heavy sacrifices in the cause of peace. In the same month the famous Munich Conference was held, at which Chamberlain signed (29 Sept.) with Hitler a declaration pledging the 2 countries to seek peaceful means of settling any future differences arising between them. Chamberlain sincerely believed that he had, in his own words, 'brought back peace in our time'; but

most neutral opinion justifiably regarded the declaration on Hitler's part as worthless and hypocritical and the whole transaction as a betrayal of Czechoslovakia. Another notable agreement signed this year was that under which the Brit. Gov. and that of Ireland composed long-standing differences over the payment of land annuities and the Brit. finally evacuated certain S. Irish ports. Popular confidence in the strength of Anglo-Fr. bonds was confirmed (July) by the success of the state visit of King George and Queen Elizabeth to Paris, and a visit (Nov.) by Chamberlain and Lord Halifax, who had succeeded Eden, seemed to emphasise the closeness of Brit. political and military collaboration with France. In 1939 foreign policy still dominated all other political issues in G. B., and nominally the gov. was still wedded to 'appeasement,' though, by now, even Chamberlain did not refrain from criticism of the Nazi regime, while the gov. rejected outright Hitler's claim for colonies. But the Prime Minister still repeated his remarkable conviction that Germany had no more intention of aggression than had Britain. Even after Hitler had overrun Czechoslovakia, he still held on his course of substituting the method of discussion for that of force in the settlement of differences. The first sign of any change in the gov.'s policy was the opening of consultations with Russia on the possibility of Ger. aggression in S.E. Europe, but the discussion led to no concrete result. On 31 Mar., when the air was full of rumours of Ger. designs on Poland, Chamberlain announced that G. B. would lend its support to Poland if that country were attacked. Again, when Italy overran Albania, the Prime Minister announced that, in the event of any action which threatened Greece or Rumania, G. B. would lend those countries all the support in her power. These pledges marked the end of the much-criticised appeasement policy and the gov. now introduced a limited measure of conscription by calling up for military training men of the ages of 20 to 21 and by doubling the strength of the Territorial Army. Having given guarantees to Greece and Rumania, the gov. realised the importance of securing the assistance of Turkey, and negotiations with that country were entirely successful. Chamberlain was in fact making every effort to build up a 'peace front,' but his hopes of getting the adhesion of Soviet Russia were disappointed. In May the king and queen made a tour through Canada and, by invitation of Roosevelt, the tour was extended to the U.S.A. With the Ger. threat to Danzig (July) and flagrant violations of Polish rights there, the approach of war was now obvious. The spirit of the nation, however, had by now become thoroughly inured to the prospect of war, and on all sides it was recognised that Nazi methods were incompatible with any settled order in Europe. On the eve of the Ger. invasion of Poland Lord Halifax (foreign secretary) reiterated G.

B.'s resolve to stand by that country (24 Aug.). G. B. went to war with Germany on 3 Sept. (see *WORLD WAR, SECOND, Causes*).

Under the National Service Bill all men from the age of 18 to 41, apart from a number who were excepted, were made liable to be called up for military service. Another Bill was passed to implement the gov.'s promise to provide grants in respect of injury or death of the civilian pop. An Emergency Powers Act was passed at the same time which empowered the gov. to do almost anything for securing the public safety, maintaining order, and prosecuting the war. Large-scale evacuation of children and mothers was carried out from London and other big cities, leading to serious educational and social problems. Owing, however, to the fact that there were no air raids in the early months of the war, many of these returned to their former homes, and for many months the people of G. B. appeared mostly to be following their normal peace-time way of life, a state of things which was destined to be rudely interrupted after the fiasco of the Norwegian campaign, and which finally ended with the defeat of France.

It was increasingly felt during the first 9 months, while Chamberlain was Prime Minister, that the war was not being prosecuted with the efficiency or vigour necessary to ensure even the possibility of ultimate victory. Matters came to a head with the utter failure of the Norwegian expedition (see *NORWAY AND DENMARK, GERMAN INVASION OF (1940)*), and the various elements of discontent boiled up in a debate in the Commons in which Amery (q.v.) summed up the feeling of the effective majority when he addressed to the Prime Minister the words of Cromwell to the Long Parliament, ending in the cry 'In God's name go!' Churchill formed a new administration within a few hrs. and the prin. Labour leaders entered the gov. in the War Cabinet and in the crucial ministries of Labour and Supply. The new gov. met Parliament on 13 May 1940, when Churchill made the first of a series of memorable speeches which heartened the nation in dark and dangerous days and impressed the friends of freedom throughout the world. In a famous passage he said on that occasion: 'I should say to the House, as I said to those who joined the government, I have nothing to offer but blood, toil, tears, and sweat.' The new gov.'s policy, he said, was to wage war with all their might and their aim was victory; victory at all costs, victory in spite of all terrors. This, at long last, was realistic language. On 22 May Parliament passed the Emergency Powers (Defence) Act, which gave the gov. complete power of control over persons and property for the prosecution of the war. The collapse of France (see *WESTERN FRONT IN SECOND WORLD WAR AND FRANCE, History. Causes of French Collapse*) caused a situation of extreme peril for G. B. On her coasts the danger was obvious and imminent, since the enemy's

first object after his conquest of France and the capture of the whole of the equipment of the Brit. expeditionary force, was to mass his armies in and about the channel ports and to assemble a large fleet of transports and barges, apparently intended for an invasion of the Brit. Isles. A 'Home Guard' (q.v.) of part-time soldiers was hastily enrolled to assist in the defence of their factories and homes. But it was evident that as the Germans did not command the sea, they could not hope to land an invading army with any chance of success unless they first secured complete mastery of the air over the channel and the Brit. Isles. In the middle of Aug. they began air operations on a large scale with this end in view, and battles between large forces occurred almost daily for over a month. In these battles the R.A.F. fighters, though always heavily outnumbered, at once demonstrated a decisive individual superiority over their adversaries, inflicting on the average at least three times as many casualties as they suffered. By the middle of Sept. it was clear that the Germans were suffering ruinous loss and were no nearer to their objective of obtaining sufficient mastery of the air to launch their projected invasion (*see* OPERATION SEALION). They then abandoned the massed assaults by daylight and adopted the policy of night raiding, in which they avoided heavy casualties at the cost of giving up their hope of destroying the defending air force and also at the sacrifice of anything like accuracy of aim. Their attacks fell principally on the great towns, especially London. The Brit. civilian pop., facing an ordeal unique in their hist., showed a fortitude that became the wonder of the world. The king and queen set an example by refusing to leave their own bombed home, except to pay sympathetic visits to whatever town seemed for the moment to be suffering most acutely, and to inspect the forces and all kinds of national effort. Losses at sea and the diversion of labour and shipping to war purposes necessitated a great curtailment of goods available for civil consumption and accordingly the rationing system became progressively more severe and taxation became increasingly heavy. On 7 Sept. London was bombed without cessation for many hrs. The most savage attack was concentrated on dockland, creating an enormous fire problem. Something of the kind had been prepared for, but the strain on the service was very heavy. On 29 Dec. another fierce onslaught was made on the city of London, the evident intention being by means of incendiary bombs, to be followed later by high explosives, to destroy the commercial heart of the empire by fire. It was during this raid that so many of the city's historic churches and buildings were destroyed. The orgy of destruction failed in its purpose, but the lesson that buildings, when otherwise unoccupied, should be guarded against a similar danger recurring was brought home to the people by the gov. and press, and very soon

compulsory fire-watching services were ordered by the home secretary. Prov. cities and towns were also heavily raided, especially in Nov. 1940. Coventry suffered appalling damage (16 Nov.), the famous cathedral being almost entirely destroyed. Other towns to suffer grave damage to shops, offices, churches, and dwelling houses were Manchester, Bristol, Birmingham, Southampton, and Sheffield (Nov.-Dec.). Very considerable damage was done to business premises, shops, and other buildings in the spring of 1941 in Plymouth, the Merseyside, Glasgow, Swansea, Bristol, and other ports, this being part of the effort to crush Brit. trade in the so-called battle of the Atlantic. (For further details of damage *see* under the names of cities and towns.)

Churchill's prestige as G. B.'s war leader remained undimmed throughout the war. When events culminated towards the end of 1941 in the marshalling of a world-wide alliance of great powers against the aggressor nations there was an enhanced appreciation of how much his leadership had contributed to this since the period when, immediately after the fall of France, G. B. and the commonwealth faced a terrible menace undaunted but alone. In particular his prompt declaration of G. B.'s full support for Russia, after she was invaded by the Germans, his historic meeting at sea with Roosevelt and the framing of the Atlantic Charter (q.v.), and his further visit to Washington (Dec.) to promote the co-ordination of the war effort of the Allies, were recognised as decisive marks of statesmanship. The increasing scale of Amer. aid for G. B. before America formally declared war on the Axis, and the growth of collaboration in every sphere between the 2 countries also owed much to Churchill's handling of Anglo-Amer. relations. War finance became more stabilised; taxation was still further increased, the standard rate of income tax rising to 10s. in the £. Organisation of man-power and woman-power developed rapidly. Compulsions were extended in sev. directions, notably for the recruitment of the women's auxiliary services and for the transfer of workers to the making of munitions from industries less important in wartime. The second National Service Act received the royal assent on 18 Dec., when a proclamation was signed by the king calling up, with certain exemptions, women between 20 and 30 years of age.

Over the broad field of strategy throughout the year the ultimately dominant factor was Brit. sea-power. The problem for Germany, whose dominion now extended over most of W. Europe, was to make this *Lebensraum* stable under the constant pressure of the Brit. blockade; and if the blockade could be maintained it was evident that the Germans during the year must attempt to break out of the encirclement, whether by invasion of G. B., by a thrust towards the Mediterranean at either end, or by an irruption still further E. than Poland. At the same time

the attempt to set up a counter-blockade continued throughout the year in the Atlantic where the Ger. Admiralty hoped, by means of unrestricted submarine warfare based on the Fr. ports, to cut off G. B. from Amer. food supplies and munitions; but by this time the U.S.A. had become convinced that her own national future depended upon sustaining G. B.'s resistance to aggression. The U.S. Gov. saw that the logic of lease and lend (q.v.) required also a guarantee that the supplies could reach their destination. The weakest link in the Brit. chain of encirclement was the Mediterranean, and the contest for its control was long drawn and fluctuating. *See further AFRICA, NORTH, SECOND WORLD WAR CAMPAIGNS IN; GREECE, SECOND WORLD WAR CAMPAIGN IN (1941); CRETE, BATTLE OF (1941).*

The outbreak of war on the E. front changed the whole aspect of affairs throughout the world. On the Axis side troops from numerous satellite countries were quickly involved in the conflict and, in response to Russian requests, G. B. declared war on those countries. The reaction in G. B. had been instantaneous. Churchill, broadcasting on the day of the Ger. invasion of Russia, unequivocally faced the simple issue that, notwithstanding differences of political creed, the enemies of Hitlerite Germany were the friends and allies of G. B. and he promised the fullest aid to Russia, though for geographical reasons Brit. assistance could only at this stage be in the form of munitions of war. Later in the year disaster came in the Far East with Japan's entry into the war. The U.S.A. was now in the war alongside G. B.; but her initial ter. and military losses in the Far East were as disastrous as G. B.'s. 1941 ended with heavy loss in the Far East theatre of war, and the prospect of still greater losses was to be feared before Brit. and Amer. sea-power could rally and restore the balance.

During the first 6 months of 1942 Parliament reflected the uneasiness of the nation at a disheartening series of military reverses and disasters. Churchill again visited the U.S.A. in June. In the meantime the Brit. Eighth Army (q.v.) was driven out of Libya, and with Rommel threatening Egypt Parliament was again anxious and critical. Churchill, for the first time, had to meet the challenge of a motion of 'no confidence' in the 'central direction of the war' in the Commons, but the vote of censure motion was defeated by 476 to 25 votes. Churchill, while admitting the seriousness of the Libyan defeat, effectively defended the central direction of the war; but he took care very soon to visit Cairo and effect a drastic reorganisation of the high command there (*see further AFRICA, NORTH*). His next review of the war situation, delivered in Sept. after his return from Egypt, gave general satisfaction to the House of Commons, and from that time relations between the House and the gov. steadily improved *pari passu* with the improved military situation; for when the king on

11 Nov. opened a new session of Parliament, Rommel was in full retreat, a large Anglo-Amer. expeditionary force had successfully landed in Fr. N. Africa, and the whole outlook in the Mediterranean had changed.

With a great army inactive in G. B., and soon swollen by thousands of troops from the U.S.A., who had been arriving in the country since the turn of the year, there had been increasing popular clamour for some more obvious exertion of Brit. military power in the European theatre of war. This clamour soon took the form of a demand for the invasion of N. Europe in order to open what was called 'a second front,' but the W. Allies were not yet ready for this.

In G. B. during this year of impending great events in the military sphere, the planned mobilisation of the last reserves of man-power for the forces and of woman-power to replace the men in essential civil work, foreshadowed the deployment of the full strength of the nation in action against the enemy. But on the other hand the phase of struggle for mere survival was so far modified that already post-war reconstruction began to be discussed, and plans made for rebuilding of blitzed cities and, especially, for the use of land the location of industry (*see under TOWN AND COUNTRY PLANNING*) and for guaranteeing social security against the fear of unemployment and want (*see The Beveridge Report, pub. 1 Dec.*). The year was also notable for a further stage in the hist. of Indian autonomy. The rapid initial success of Jap. arms quickened the desire of G. B. for the removal of the political obstacles to India's war effort, and on 11 Mar. Churchill announced that the War Cabinet had formulated a plan for the appointment after the war of an elected All India constituent assembly to draw up a constitution on dominion status lines, which plan had been taken to India by Cripps (q.v.) for negotiation with the political parties there; but in the result the Indian Congress rejected the proposals.

During the year, although Ger. air activity over G. B. had declined greatly from the weight of the 1940 raids, the Germans, during April-May, carried out a number of rather heavy raids on the cathedral cities of Exeter, Bath, Norwich, and York (Canterbury was attacked in Oct.), doing considerable damage to life and property. G. B. was now waging more effective war against the Ger. U-boat menace. The combined effect of sea and air patrol was increased destruction of Ger. submarines operating near G. B., which sent them ever further afield in search of their victims (*see also COASTAL COMMAND*). Under the leadership of Air Marshal Sir Arthur Harris the Brit. bomber force began to strike deadly blows at the enemy's war production. Churchill promised that Ger. cities, harbours, and centres of war production would be subjected to an ordeal the like of which had never been experienced by any country in continuity, severity,

and magnitude (see further under AIR RAIDS).

In 1943 Churchill, with the foreign secretary, Eden, took part in a series of international conferences at which the allied war plans were concerted, and provision was made for continued collaboration after the war—a collaboration which, in the result, was to be far from whole-hearted. With the war progressing favourably, Parliament turned its attention increasingly to post-war policies, particularly in physical and social reconstruction. The gov. accepted (Feb.) in principle the plan for social security expounded in the Beveridge report; and in a broadcast to the nation on 21 Mar. Churchill outlined a 4-year plan of post-war social policy for execution by a national gov., representing all parties. He said that he favoured 'national compulsory insurance for all classes, for all purposes, from the cradle to the grave,' and later (9 Nov.), at the Mansion House, he said the gov. were formulating plans to ensure that after the war food, work, and homes were found for all. In the following Sept. the gov. introduced a scheme for collection of income tax from current earnings, known as P.A.Y.E. (Pay As You Earn). This scheme, as prepared by Kingsley Wood (q.v.), chancellor of the exchequer, was at first designed to apply only to weekly wage earners; but his successor, Sir John Anderson, extended it to all salaried workers earning up to £600 a year and, later, to the whole range of Schedule E taxpayers. Late in Dec. R. A. Butler (q.v.), then minister of education, introduced his new Education Bill, designed to supersede all previous Acts and involving a complete recasting of the national system of education (for full details see EDUCATION).

The mobilisation of Britain's manpower reached its peak this year. This mobilisation was, in fact, more extensive and more thorough than in any other country, allied or enemy, engaged in the war. But it involved severe combing, notably in the coal-mines and in the cotton industry. The weakening of the labour force in the mines created so serious a problem as to necessitate the unprecedented direction of youths of 18 to coal-mining as an alternative to military service, and indeed the blow to the industry was so serious that it was one of the factors that contributed to the economic and industrial crisis of 1946-7. For the time being, however, the remarkable war effort of G. B. was eloquently reflected in the mounting scale of the country's air and anti-submarine warfare on Germany.

The white paper on Brit. medical services was followed (May) by a white paper on employment policy, in which the gov. accepted the much-quoted assumptions of the Beveridge report, but fell short of Sir Wm Beveridge's confident exposition of 'full employment in a free society' by setting forth only the essentials of a policy for maintaining after the war 'a high rate of employment.' In

Sept. the gov. announced their proposals for children's allowances, comprehensive social insurance, industrial injury insurance, and reform of public assistance. Parliament gave general approval to these proposals, and a Ministry of National Insurance was estab. under Sir Wm Jowitt to administer the current insurance schemes and supervise the work of the Assistance Board. The housing problem, however, was to prove an intractable one both as to immediate needs and long-term programmes and, as to the former, the arrival of the flying-bomb (q.v.) in the summer upset arrangements for an early resumption of building. The Town and Country Planning Act, which gave local authorities wider powers to purchase compulsorily land required for the reconstruction of blitzed and blighted areas, became law after an acrimonious passage through Parliament (see TOWN AND COUNTRY PLANNING).

The great industrial effort behind the forces assured the success of the projected invasion of Normandy on D-Day, the governing date for making the utmost impact on the enemy. On that day (6 June), though the maximum mobilisation of man-power was reached the previous year, the accumulation of armed strength in men and munitions continued. On D-Day there were 4,500,000 men in the armed forces, notwithstanding the casualties in nearly 5 years of war, while there were now 500,000 women in the auxiliary forces.

Up to this date more than twice the productive effort of the First World War had been absorbed by the Second World War. During the year many Home Guards (q.v.) served as anti-aircraft gun crews, but the war was now so clearly reaching a favourable climax that the Home Guard was stood down early in the winter. A gov. white paper (Nov.) on the Brit. war effort showed that Britain had mobilised 22,000,000 men and women in the active age groups for direct war service in the forces or in industry—i.e. 69 per cent of the pop. in their age groups. G. B. itself had produced seven-tenths of the munitions supplied to the Brit. Commonwealth, other empire countries had produced another tenth, while the balance came from the U.S.A. From the beginning of the war to the end of 1943 G. B. built 6,750,000 dead-weight tons of new merchant shipping and, in agriculture, the ploughing up of 7,000,000 ac. of grass-land had resulted in halving food imports. Nearly 1 in 3 of all houses in the kingdom had been destroyed or damaged, 202,000 were totally destroyed, another 255,000 rendered uninhabitable. At sea nearly 3000 Brit. ships had been sunk. Exports had been reduced to less than a third of the 1938 figure. Direct taxation had increased from £494,000,000 in 1938 to £1,781,000,000 in 1943, indirect from £582,000,000 to £1,249,000,000. Total war expenditure had now reached the great sum of £25,000,000,000. To pay for imports of war materials the gov. had to sell overseas assets worth £1,065,000,000,

while incurring fresh overseas liabilities to the amount of £2,300,000,000. Nearly a quarter of a million members of the Brit. armed forces lost their lives during the war, and over 58,000 civilians.

The ending of the war in Europe was quickly followed by the dissolution of the Coalition Gov., and the general election that came soon after resulted in the return of a Labour Gov. with a large absolute majority. This was the third Labour Gov., but the first that held both office and effective power. The Labour party put forward an industrial programme for the nationalisation of the coal, gas, and electricity industries, of inland transport services, and of the iron and steel industries. They also advocated public ownership of the Bank of England and the creation of a National Investment Board. The Conservatives stoutly opposed this domestic policy, and the electoral battle was fought mainly on this issue of nationalisation. The Conservatives suffered one of the severest defeats in their whole hist.; for in a House of Commons of 640 members the Labour party won 393 seats as against 166 in the previous Parliament; the Conservatives dropped from 358 to only 189 seats; while the Liberal party, who had put forward 307 candidates, had only 12 elected. Attlee (q.v.) accepted the king's invitation to form a gov. There was no equivocation in the matter of nationalisation, for on 19 Nov. Morrison, leader of the House of Commons, announced that during the lifetime of the present Parliament the gov. would bring under public ownership the electricity supply industry, the gas industry, railways, canals, docks and harbour undertakings, and long-distance road haulage, while road passenger transport would be co-ordinated with the national scheme.

The keynote of life in G. B. in the months following the end of the war was its austerity or poverty, and so far from time bringing any mitigation, this austerity was destined to become gravely aggravated before the end of 1946, gradually rising to a crescendo of the most acute national crisis. The sudden end of the war with Japan (Sept. 1945) enabled a somewhat greater total of releases from the forces than had been previously proposed, and by 30 Nov. 955,315 men and 147,229 women were discharged to take part in the export drive for increased dollar resources. The financial stringency in Britain, which now made itself felt throughout the whole political and economic system of the country, was influenced largely by the cessation (2 Sept.) of the lend-lease arrangement immediately following the defeat of Japan. Under that arrangement G. B. having paid away her foreign investments to finance the war effort, had converted a great proportion of her industry to munitions and other war supplies, relying on America to feed the people. It was economically impossible to import and pay for the necessities of life pending the outcome of the national effort to restore

the British export trade; hence it became urgent to secure a large credit in Amer. dollars to survive the period of reconstruction, and after many weeks of negotiation in Washington a loan of \$1,100,000,000 was arranged, but with certain stringent conditions attached.

Early in 1945 Churchill had met Roosevelt and Stalin at Yalta in the Crimea to make plans for the final defeat, occupation, and control of Germany and for eventual co-operation for peace (4-11 Feb.), and on Churchill's return to Britain his gov. received a vote of confidence on the Crimea decisions by 413 votes to nil. This conference portended the defeat of Germany. While the election result in Britain was awaited Churchill went to Potsdam (17 July) (see also POTSDAM AGREEMENT) for a conference with Truman and Stalin, and in the unusual circumstances he asked Attlee, as leader of the opposition, to accompany him. They left the conference to be in Britain for the declaration of the election results on 26 July, and it was Attlee who returned to the conference 2 days later as Prime Minister with Ernest Bevin as his foreign secretary. Thus ended Churchill's premiership; but for the most part Brit. foreign policy continued unchanged throughout this and the following year.

In the first session of the new Parliament, which lasted for nearly 15 months, the gov. enacted a great vol. of reconstruction legislation besides a large instalment of their own distinctive programme of socialisation. In this session alone no fewer than 84 Acts were passed, outstanding social measures being the National Insurance Act, a consolidating measure providing also for an extended system of national insurance and also for the making of payments towards the cost of a national health service, and the complementary measure, the National Health Service Act, to establish a national health service for England and Wales; and the National Insurance (Industrial Injuries) Act, which repealed and replaced the former series of statutes on workmen's compensation and made new and better provision for compensation for industrial casualties.

The output of the coal-mines, which the State took over at the beginning of the year (1947), fell at that time far short of requirements, with the result that industry made a bad start in a year when increased production both for domestic needs and export was essential. This set-back hastened the onset of a long-threatened economic and financial crisis. For the large Amer. loan, the use of which had for more than year concealed the economic instability of G. B., was rapidly being exhausted. In the effort to restore the balance of trade against the time when G. B. must try to live upon its own income, austerity measures were increased, and, for the first time, bread consumption was limited by rationing; currency allowances for foreign travel were suspended; the basic petrol ration was

withdrawn; and the already small supplies of newsprint further curtailed. Cripps (q.v.) was appointed to the new office of minister of economic affairs, with the general responsibility of planning the augmentation and use of the national resources. Soon afterwards he succeeded Dalton (q.v.) as chancellor of the exchequer and thus reunited economic and financial supervision at the Treasury. His first duty in this office was to make substantial cuts in plans for capital expenditure so as to resist the inflationary pressure which was largely accountable for the maldistribution and misapplication of both labour and resources. At the same time the fruition of long-term imperial policies, which had nothing to do with the economic emergency, tended to reduce certain Brit. overseas commitments. These were the granting of dominion status to India, Pakistan, and Ceylon, and independence to Burma.

Although in the field of foreign affairs—particularly over the problem of the place Germany was ultimately to take in the continental system—mutual recriminations filled the diplomatic hist. of the year, it was commonly agreed by all political parties in G. B. that the national interest was being maintained with high patriotism and ability by Bevin (*see further under EUROPE, History*). In domestic affairs, however, the antagonism of parties tended to become further exacerbated as the year wore on. The gov. proceeded with its programme of nationalisation, completing legislation to bring all inland transport and the electricity and gas industries under state control (*see BRITISH ELECTRICITY AUTHORITY; TRANSPORT ACT, 1947*). In the new session of Parliament (Oct.) the gov. deferred their intention to extend nationalisation to the iron and steel industry and, instead, declared preventive war on the House of Lords in the shape of a Bill to amend the Parliament Act, 1911 (q.v.). It was proposed to reduce from 2 years to 12 months the period during which the House of Lords might delay the enactment of a Bill which it refuses to pass. In Feb. 1947 the royal family left Portsmouth for a 2 months' tour through South Africa. Princess Elizabeth came of age in April, and on 20 Nov., amid universal acclamation, was married to Lt. Philip Mountbatten, son of Prince Andrew of Greece, created duke of Edinburgh (q.v.) on his wedding day.

G. B.'s outstanding achievement in the sphere of foreign affairs in 1948 was the consummation, through Bevin, of the idea of a W. Union to counteract the 'cold war' waged by Russia against the peace of Europe. Talks were begun later between G. B., France, and the 'Benelux' (q.v.) countries to secure a voluntary association of their govts. to deal with practical economic and military problems, and the ultimate outcome of this diplomacy was the signing in Washington (5 April) of the N. Atlantic Pact by all these countries and the U.S.A., together with 6 other nations (*see further under EUROPE, History*).

The Parliament Bill came up for second reading in the House of Lords (27 Jan.). A motion by Lord Salisbury in the Lords for the rejection of the Bill was carried by 177 votes to 81 (8 June). The gov. then decided to resort to the procedure of the Parliament Act, 1911, to carry their new Bill into law. The Bill was passed by the Commons in Sept. The budget introduced by Sir Stafford Cripps in April aimed at a surplus which would more than provide for all the gov.'s expenditure and leave a balance to counter inflationary pressure and it also sought to adjust taxation so as to give greater incentives to



THE QUEEN AND THE DUKE OF EDINBURGH ON THE OCCASION OF THEIR WEDDING, 20 NOVEMBER 1947

production. In the course of the year there was a rapid increase in production, coupled with the arrest of the inflationary tendency in Brit. economy, and the position of the overseas' balance of payments began to improve. Taxation remained as high as ever in 1949 and was even increased in sev. directions, the chancellor admitting that it was impossible to reduce it so long as the defence and social services continued on the existing scale. An Iron and Steel Bill introduced in the 1948-9 session of Parliament proposed to nationalise the prin. firms engaged in the basic processes of the iron and steel industry, together with their wholly owned subsidiaries. This Bill was particularly strongly opposed by the Conservatives, but eventually became law. The Conservatives, however, undertook to denationalise the iron and steel industry as soon as they returned to power. Altered circumstances induced the gov. to increase from 12 to 18 months the period of

compulsory whole-time military service, and in the debate on the consequent National Service (Amendment) Bill a motion by Labour back-benchers was defeated by 339 votes to 51, the Bill receiving the royal assent soon afterwards. On 14 Nov. 1948 a son, Prince Charles Philip Arthur George, was b. to Princess Elizabeth, Duchess of Edinburgh. In April 1949 G. B. was a co-signatory with the U.S.A., Canada, France, and the Benelux countries of the North Atlantic Treaty, the purpose of which was mutually to guarantee each of the parties against aggression.

In 1950 the general election saw a bitter struggle between the 2 prin. parties, Labour and Conservative, and a further decline in the number of Liberals returned to Parliament. The Labour party fought the election on their legislative record of the preceding 5 years, promising, in addition, a future programme involving more nationalisation. The Conservatives alleged that the gov. had seriously increased Britain's economic difficulties. In the result, Labour retained power, with a greatly reduced majority (of 8, as against 186 in 1945). For the next 18 months the party battle in the House of Commons was almost continuous and bitter.

In June 1950 the Korean war (q.v.) broke out and the Conservative opposition supported Attlee in his policy of full co-operation with the U.S.A. and U.N.O. on this issue. Before the end of the year Brit. troops were serving in Korea, and they played a distinguished part in holding the Chinese offensive of April 1951 along the Imjin. Chinese intervention in Korea raised the problem of Communist China's status in the world, and at U.N.O. Britain had already recognised the Peking gov. as the *de facto* gov. of China; but the U.S.A. had not done so; and in many quarters in Britain and W. Europe Amer. Far E. policy was occasionally viewed with misgiving, as being too ready to be interventionist. But truce talks began in Korea in 1951, although an armistice was not concluded until 2 years later.

The Korean war had economic repercussions throughout the W. world which had an adverse effect on Britain's trade position. This had been improving for the past 2 years: now it worsened rapidly. Rationing of various staple foods still existed in Britain, although not in most other W. European countries, and this, coupled with the continuing housing shortage caused increasing irritation. The Festival of Britain, held 100 years after the Great Exhibition, was opened by King George VI in 1951. In the autumn of 1951 there was another general election. A sweeping Conservative victory was at first predicted; but the contest was in fact very close. The result was a Conservative victory, with a majority of 16; and Winston Churchill became the new Prime Minister.

Early in 1952 George VI d. suddenly, and was succeeded by his elder daughter

as Queen Elizabeth II (q.v.). The Conservative gov. concentrated on the economic plight of the country: they had accepted the bulk of the nationalisation carried out by their predecessors, but they did repeal the Acts which had nationalised iron and steel, and road transport. The internal economic situation showed steady improvement: full employment was maintained, and some controls were abolished. Food rationing was modified. 1953 was notable for the coronation of Elizabeth II, celebrated in Westminster Abbey on 2 June. On coronation day the news reached Britain that the Brit. expedition had succeeded in climbing Mt Everest. In Nov. 1953 the queen and her husband left the country on an extensive Commonwealth tour.

The international situation appeared to have eased since the death of Stalin. In 1954 the foreign secretaries of the great powers (including Communist China) met at Geneva and agreed a settlement which concluded the Indo-China war. In the same year the Fr. Assembly finally rejected E.D.C.; but subsequently the agreements signed in London (1954) solved the problems of W. European defence which the Fr. rejection had brought to a head. In the local elections in May Labour had made considerable gains; but the domestic position seemed to be improving steadily, and food rationing ended in 1954. The rate of house-building had greatly increased. The Bank rate was reduced to 3 per cent, and consumer goods were now much more plentiful. After the second Comet airliner crash within a year (10 Jan. and 9 April 1954) all Comets were grounded and subsequently withdrawn from service, a blow to Brit. civil aviation. Though there were serious internal troubles in 2 Brit. colonies, Kenya (q.v.) and Cyprus (q.v.), settlements in 2 outstanding problems were reached in 1954: in July Britain and Egypt signed an agreement by which Brit. troops were to leave Suez within 20 months; and in August the Persian oil dispute (dating from 1951) was settled, compensation being paid to Britain.

On 5 April 1955 Churchill resigned from the premiership, and was succeeded by Eden. A national newspaper strike, lasting 26 days, prevented the retirement of Britain's leading statesman being discussed as much as might otherwise have been the case. The April budget gave substantial reductions in income tax. At the general election in May 1955 Eden's gov. was returned with an increased majority. In Dec. Attlee resigned from leadership of the parl. Labour party and was granted an earldom. The new Labour leader was Gaitskell (q.v.), elected in preference to Morrison (q.v.) and Bevan (q.v.). In July a meeting of heads of Gov. (of Britain, France, Russia, and the U.S.A.) took place at Geneva, the first meeting of this kind since the Potsdam conference 10 years earlier.

A national railway strike, 28 May-14 June, caused a state of emergency to be

proclaimed on 31 May. The internal economic situation was showing signs of deterioration. Prices continued to rise; financial restrictions were imposed, and in Oct. Butler introduced a supplementary budget which increased the rate of purchase tax. In Dec. Macmillan (q.v.) became chancellor of the exchequer in succession to Butler. After sev. months of conflicting popular rumours on the subject, it was announced in Oct. that

have not been given effect. By 1958 Anglo-Maltese relations were in fact severely strained, owing to Maltese fears that Brit. naval economies would cause unemployment in Malta's dockyards.

On 1 Jan. 1956 the Sudan became independent. In June the last Brit. troops left Suez. The Russian leaders, Bulganin and Khrushchev, visited England in April, and, for the first half of the year, foreign affairs seemed on the whole to be



Central Press Photos

THE HOMECOMING OF THE EVEREST TEAM, 1953

A group on arrival at London Airport, including the leader, Col. Sir John Hunt (with ice-axe), Sir Edmund Hillary, and Sherpa Tenzing

Princess Margaret (q.v.) was not to marry Group-Capt. Peter Townsend. A notable event of the year at home was the inauguration of an alternative television programme, deriving its income from commercial advertisements.

The Cyprus situation worsened during 1955; in Nov. a state of emergency was proclaimed. But more hopeful aspects of external and imperial policy were the formation of the Bagdad Pact, a defensive pact including Britain and certain Middle East countries (Pakistan, Iraq, Persia, and Turkey), and the recommendation (Dec., intended to solve Malta's economic difficulties) that Malta should be 'integrated' into the U.K., sending 3 of her M.P.s to the Westminster Parliament. A Maltese referendum in Feb. 1956 approved the proposals, but so far (April 1958) they

running smoothly, though within the Commonwealth, in Cyprus, terrorism continued, and as a result, Anglo-Gk relations deteriorated considerably. The riots in Jordan against proposals for Jordan's entry into the Bagdad Pact and the dismissal of Gen. Glubb, Brit. Commander of the Arab Legion there, in Mar., were also signs that the Middle East situation was far from stable. At home, the economic situation was uncertain. In Feb. the Bank rate was increased from 4½ to 5½ per cent (the highest since 1932) and there were further anti-inflationary measures in the form of cuts in the food subsidies and more hire-purchase restrictions. Throughout the year there was increasing unemployment or underemployment in the car industry. In Sept. the T.U.C. rejected wage restraint.

Lincolnshire Railway. In 1897 an extension was constructed from Annesley in Notts to Quainton Road in Buckinghamshire, which enabled the company to bring its line to London by the Metropolitan Railway. After this it was known as the G. C. R., with its chief London station at Marylebone. Under the Railways Act, 1921, the G. C. R., in 1923, was merged, together with several other independent lines, in the group named the London and North-Eastern Railway Company. For later development see LONDON AND NORTH-EASTERN RAILWAY COMPANY.

Great Charter, The, see MAGNA CARTA.

Great Circle, or Tangent, Sailing was known at least as early as the 16th cent., for John Davies refers to it in his *Seaman's Secrets*, 1594. A navigator who sails along the arc of a G. C. reaches his destination by the shortest route. A G. C. on a sphere is one whose centre corresponds with the centre of that sphere; in the case of the earth the equator and all meridians are imaginary G. C.s. An amateur consulting the map of the world as it is erroneously represented on Mercator's projection would naturally imagine that a ship's shortest course is along the 'rhumb' line, that is, the straight line joining the 2 places concerned, more especially as the graph of the G. C., when plotted on such a map, must of necessity be represented by a curve. But this is not so. On Mercator's map the curve of the G. C. will always come on the polar side of the rhumb line. This explains why the curved course is really the shorter: the difference of lat. is the same for the curved and for the straight tracks, but the former, being on a higher circle of lat., has the advantage of shorter degrees of long. Thus the nearer the voyage is to the polar regions, the greater will be the difference between the tracks. As a matter of fact sailors cannot take advantage of this in the Arctic and Antarctic regions, as other conditions, such as the existence of ice, make navigation unsafe. Thus if they wish to go from Australia to the Cape of Good Hope, they must follow what is called a 'composite' G. C. in order to avoid the dangerous lats. In place of the 'vertex,' that is, the point on the G. C. track which is furthest from the equator, they must substitute the most southerly lat. they dare touch. In practice it is impossible to keep the vessel always along the G. C.: what happens is that it is steered in a series of courses, which are, roughly speaking, tangents to that circle, and it therefore follows that the greater the number of those courses, or in other words the shorter the tangents, the more nearly will the actual course approximate to the theoretical. Thus the ship is never headed direct for her destination till the latter is actually in sight, and traverses the meridians each time at different angles. A vessel steering a rhumb line crosses all meridians at practically the same angle. A rough means of discovering the G. C. is to stretch a piece of string

tightly between the places of arrival and departure on the earth's globe, and so locate a few points on the circle: an accurate measurement involves a knowledge of spherical trigonometry.

Great Dane, The, large dog which became popular in England about 40 years ago. It is very muscular and strongly built, but its movements are easy and graceful. It is faithful and trustworthy, and when first introduced into England was a favourite companion of both ladies and gentlemen. It is now chiefly used as a show dog, but in the Middle Ages it was a sporting dog, and was employed to hunt the wild boar and chase the deer, being very suitable for this owing to its great activity, muscular development, and power. It has been



T. Fall

GREAT DANE

called by various names, 'German boarhound,' 'Ulmer Dog,' or 'German Dogge,' and some say it originated in Germany. In any case it was very popular there, and Prince Bismarck had a G. D. as companion and owned specimens for 60 years. One of his hounds, Tyras, is said to have attacked the Russian Prime Minister, Gortschakoff, when he was holding a spirited conversation with his master. Tyras was slate coloured, a type very popular in Germany, but the recognised colours for the Eng. show dog are bluish-grey, fawns, blacks, brindles, and harlequins. The dog has a long head, which it carries high, broad muzzle, blunt at the point, a large nose, small eyes deeply set, and very small ears. Its neck is rather long and well arched, the legs strong and straight, terminating in large round feet. The tail is long and has a slight curl at the end, and its hair is very short. The dog should not be less than 30 in. in height, and its minimum weight should be 120 lb.

Great Dividing Range, mt system in Australia, which extends from N. to S. near the E. coast, then turns W., terminating a little to the E. of the W. frontier of Victoria. The highest summit is 7349 ft.

Great Driffield, mkt tn of the Bridling-ton par. div. of the E. Riding of Yorks, England, in the wolds, 19 m. from Scarborough. The prin. industries are milk processing, manuf. of agric. implements, and flour milling. Pop. 7000.

'Great Eastern,' great ship planned in 1852 by Brunel and Scott Russell, which was the largest in existence at that time. It was completed at Millwall in 1857, and was originally intended for the route to Australia round the Cape. In 1859 the ship was launched, but an explosion took place off Hastings, and a trip across the Atlantic had to be postponed. In 1860 the vessel reached New York in 11 days, and from 1869 the *G. E.* laid some of the telegraph cables across the Atlantic. She was broken up in 1888.

Great Eastern Railway, formed in 1862 by the amalgamation of the Eastern Counties, Eastern Union, and other railway companies in East Anglia. For further information, see LONDON AND NORTH-EASTERN RAILWAY and RAILWAYS.

Great Falls, city in Cascade co., Montana, U.S.A., on the Missouri R. about 10 m. from the G. F. of the Missouri, from which it derives its name. It is the largest city of the state, a port of entry, and a commercial and industrial centre for an irrigated area and mining region; it has copper and zinc reduction plants, railroad shops, and an oil refinery, and produces copper wire and electrical equipment, bricks, furs, flour, feeds, and beverages. Coal mines and 4 hydro-electric plants are near. G. F. has a U.S. Air Force base, a hospital, a state school for the deaf and blind, a fish hatchery, and an airport. The Missouri R. here drops 365 ft in 8 m. Pop. 39,214.

Great Faringdon, see FARINGDON.

Great Fire of London, second of London's great fires, the first being in 1136 (see under LONDON, *History*). It occurred during the period 2-6 Sept. 1666. Starting in a bakery in Pudding Lane, in 4 days it devastated 400 streets and lanes, 13,200 houses, St Paul's Cathedral, 89 par. churches, the Guildhall and other public buildings, jails, markets, and 52 halls. The area affected comprised 373 ac. within and 63 ac. without the walls, from the Tower to the Temple Church. The loss of property (uninsured—fire insurance had not yet come into effect) was estimated at from 7 to 10 million pounds; 200,000 people were made homeless; there were very few deaths, but some murders. Pepys, who viewed the fire from the top of Barking steeple on 5 Sept., has left a graphic description. A Frenchman persisted in confessing that he had started the fire as part of a Rom. Catholic plot; though the judges and jury realised that he was innocent he was executed. The fire was a tremendous blow to commerce and the public revenue, especially as the nation was at war with the Dutch. The fire is commemorated by the Monument (q.v.). See W. G. Bell, *The Great Fire of London*, 1920.

Great Fish Bay, inlet of the Atlantic in Portuguese West Africa, 20 m. long.

Great Fish River: 1. In Cape Province, South Africa, rises in the Sneeuwbergen Mts, and enters the Indian Ocean after a course of 230 m. The G. F. R. drains over 12,000 sq. m. It was along this riv. that Bantu and Boer first met and clashed, c. 1610.

2. Or **Back River**, in Canada, rises close to Lake Aylmer and flows into the Arctic Ocean. It has a wide estuary, and Montreal ls. stands at its mouth, where relics of Sir John Franklin's expedition were discovered.

Great Gable, mt. of Cumberland, England, near Scafell, height 2950 ft. It is a favourite resort of rock climbers for Gable crags, Kern Knotts, and the Napes Needle. G. G. since 1923 has belonged to the nation, being the war memorial of the Fell and Rock Climbing Club.

Great Glen Fault, The, a fault (i.e. a fracture along which earth movements have taken place) extending across Scotland in a N.-easterly direction from Fort William to Inverness. The shattering of the rocks caused by movement along this fault has made them particularly susceptible to erosion, and the line of the fault is marked by a hollow in which lie Loch Linnhe, Loch Lochy, and Loch Ness, and which is followed by the Caledonian Canal. Although the G. G. F. was first formed in quite early geological times, it has remained slightly unstable up till the present day, and the neighbouring country is still subject to slight earthquake shocks.

Great Grimsvy, see GRIMSVY.

'Great Harry' (Henry Grâce à Dieu), man-of-war built by Henry VII, the first of any size built in England.

Great Harwood, urb. dist. in the Clitheroe par. div. of Lancs, England, 4 m. from Blackburn. Textile manufs. form the main industry. Pop. 11,000.

Great Kingfisher, see LAUGHING JACKASS.

Great Lakes, The, Superior, Michigan, Huron, Erie, and Ontario, fresh-water inland seas at the N. of the U.S.A. With the help of the St Lawrence Seaway (now under construction), the Welland Ship Canal, and the Sault Sainte Marie Canals, they are navigable by ocean vessels all the way to Chicago on Lake Michigan and Duluth on Lake Superior. Superior (first in size and in depth) is connected with Huron by St Mary's R. and the Canadian and U.S.A. 'Soo' canals. Michigan (third in size, second in depth) discharges through the Straits of Mackinac into Huron. Huron (second in size, third in depth) discharges into Erie by way of the St Clair R., Lake St Clair, and the Detroit R. Erie discharges into Ontario through the Niagara R. and is connected with it also by the Welland Ship Canal. In addition the Illinois Waterway, accommodating barges and steamers of 9-ft draught, connects Lake Michigan at Chicago with the Mississippi R.; and the New York State Barge Canal, 12 ft deep, connects Lake Erie at Buffalo with the Hudson R. and New York City. The lakes are ice-bound for some 5 months of the year, but are used for the

rest of the year by both freight and passenger steamers. The grain and iron-ore traffic, fed by the grain-growing areas to the W. and NW. and the mines of upper Michigan and Minnesota and W. Ontario, is enormous. Nickel, copper, gold, silver, cobalt, arsenic, bismuth, and pitchblende are found to the N. of Lakes Huron and Superior, and rich forest lands on their Canadian shores have given rise to a large wood-pulp industry. The Niagara Falls are a valuable source of electric power both to the U.S.A. and to Canada. The G. L. are rich in fish of commercial value. The chief ports are Fort William, Port Arthur, Hamilton, Toronto, and Kingston in Canada, and Duluth, Chicago, Milwaukee, Detroit, Cleveland, Erie, and Buffalo in the U.S.A.

'Great Learning,' see CHINESE LITERATURE.

Great Lever, see LEVER.

Great Malvern, see MALVERN.

Great Marlow, see MARLOW.

Great Northern, The, company which prior to the 1923 railway amalgamations formed with the N.-E. and N. Brit. lines the 'East coast' express route between England and Scotland. It was started in 1846, and owed its origin to the amalgamation of the London and York and Direct N. Railways. In 1923 it was merged, together with sev. other independent lines, in the London and N.-E. Railway group (q.v.).

Great Northern Railway Board, one of the prin. Irish Transport undertakings, and the major one operating Cross Border services between the Rep. of Ireland and N. Ireland. On 1 Sept. 1953 the working of the G. N. R. B. (Ireland) was taken over by a Joint Board appointed by the Govs. of the Rep. of Ireland and N. Ireland, who had acquired it by paying compensation to the shareholders. The G. N. R. (Ireland) was formed in 1876 by the amalgamation of sev. existing railways, the oldest being Ulster Railway opened to traffic between Belfast-Lisburn in 1839 (one of the oldest in the Brit. Isles) and the Dublin-Drogheda Railway opened in 1844. The total route mileage is 543 and the gauge 5 ft 3 in. The rail services cover the N. half of Leinster and much of Ulster. The main line runs from Dublin to Belfast, and branches connect with Derry and Donegal via Portadown, Enniskillen and Clones via Dundalk. There are also branches from Drogheda to Navan and Oldcastle and connections from Belfast to Cavan and Donegal. The internationally known 'Enterprise' expresses run non-stop between Dublin and Belfast, a distance of 112½ m. in 2½ hrs. An extensive network of road passenger and freight services are operated in the Rep. of Ireland with a fleet of 160 omnibuses and 140 lorries.

Pioneers in diesel traction on Irish railways, the G. N. R. operates about 25 per cent of its passenger services by diesel railcars, and further dieselisation proposals are being examined. Two hotels situated at Rostrevor in County Down and Bundoran in County Donegal

are owned and managed by the G. N. R. The head office of the Board is at Dublin, the Traffic Manager's office at Belfast, and the Mechanical Engineer's office at Dundalk. See also CORAS IOMPAIR EIREANN and ULSTER TRANSPORT.

Great Northern Railway Company of the U.S.A. is the most northerly of the great transcontinental routes within U.S. ter. Its E. terminus is St Paul, which lies over 400 rail m. NW. of Chicago; the main line runs to Seattle and other large cities of the NW. of the U.S.A. The total mileage worked by this great railroad is 8305 m. Its freight traffic in that part of its system adjacent to the Great Lakes is very large, as this neighbourhood supports the greatest wheat traffic in the world.

Great Oasis of Egypt, see KHARGA.

Great Orme, see ORME'S HEAD.

Great Powers, term of somewhat vague import, connoting the leading states of the world; but when, after the battle of Waterloo, it was first used, it meant only the leading European states—Great Britain, France, Austria, and Russia—whose statesmen were responsible for the peace of 1815. After the Franco-Ger. war of 1871 Germany became one of the chief powers, and later Italy, consequent on the hegemony achieved under Garibaldi. After the advent to power of Hitler, Germany from 1933 to 1941 was the dominant voice in continental politics, while France, which under Briand had been an influential power in the League of Nations, dropped out for a time following her crushing defeat in 1940. Italy, under Mussolini, became a potent factor in the orientation of Mediterranean powers, but after her defeat in North Africa became a mere satellite of Germany. After Russia's defeat by Japan in 1903-4 the latter gradually became the leading power in the Far East. Almost throughout the last century, however, the U.S.A., though playing next to no part in European politics, was a potential world power. To-day the leading powers are the U.S.A., Russia, Britain, and France, while in the E. China has taken the place of Japan.

Great Purge, in Soviet Russia, wave of terror which shook the country in 1936-8. The assassination of Kirov (q.v.) in 1934 was used as a pretext for the arrest of former oppositionists. The scope of the arrests gradually widened, and by mid 1936 they became quite arbitrary and almost indiscriminate, though they affected the higher officials and certain national minorities more than the rest of the pop. Among those arrested were the majority of the Communist party's central committee, including many loyal Stalinists, Yagoda, head of the N.K.V.D., and even Politburo (q.v.) members. Those arrested were branded as 'enemies of the people' and charged with high treason, espionage, sabotage, preparation of terroristic acts, etc. The only proof of their guilt was their 'confessions' obtained through torture, and they were summarily sentenced by special N.K.V.D.

three-man committees to death or long-term imprisonment in corrective labour camps (q.v.). Only a few cases were presented at the Zinov'yev, Pyatakov, and Bukharin show trials. No statistics on the number of victims of the G. P. are available, but the estimates of 8 or 10 million do not seem unduly exaggerated. The G. P. ended with the replacement of Yezhov (q.v.) by Beria as N.K.V.D. head; the latter released some of the prisoners. Stalin provided ideological justification for the G. P. by saying that the class struggle sharpens as the country advances towards full socialism. The results of the G. P. were the final estab. of Stalin's dictatorial rule through his personal secretariat and the security organs, elevation of the latter above the party, and the emergence of that atmosphere of complete fictitiousness and insincerity which was so characteristic of Soviet public life until the post-Stalin 'thaw.' See F. Beck and W. Godin, *Russian Purge and the Extraction of Confessions*, 1951; A. Weissberg, *Conspiracy of Silence*, 1952; H. Dewar, *The Modern Inquisition*, 1953; *The Dethronement of Stalin* (Khrushchëv's report at the secret session of the 20th Party Congress, pub. by the *Manchester Guardian*, 1956).

Great Reforms, The, in Russia, reforms carried out in the reign of Alexander II (q.v.) which radically changed the social and political life of the country. The main reforms were emancipation of the serfs (1861) with the granting of land and reform of their self-gov. system (see MIR); local gov. reform (prov. 1864, see ZEMSTVO; municipal 1870); reform of the judiciary, introducing trial by jury (1864); and the introduction of universal military service (1874) and of autonomy of the univs. (1863). The G. R. were carried out by liberal ministers and officials encouraged by the emperor and by progressive public opinion, against the opposition (and often sabotage) of both conservatives and revolutionaries. To 'crown the edifice' of reforms, a representative assembly with consultative functions was to be estab. in 1881, but on the day of signing the relevant decree Alexander II was assassinated, and the G. R. came to an end. Civil service and police remained unreformed, with grave consequences to the future development of Russian hist. See also LORIS-MELIKOV; MILYUTIN; SLAVOPHILES; VALUYEV; ZARUDNYI. See H. Seton-Watson, *The Decline of Imperial Russia*, 1952.

Great Rift Valleys, depression stretching from Palestine to Central Africa. These rift valleys have their origin in the valleys of the Jordan and Dead Sea, extend through the Red Sea, and across Fr. Somaliland and Ethiopia to Lake Rudolph. They then divide, one branch extending in a southerly direction through Lake Manyara, the other in a westerly direction through the Albert Nyanza, and then taking a southerly course to Lake Tanganyika. These valleys are parallel cracks in the earth's crust, and in Central

Africa have walls between 4000 and 5000 ft above sea-level.

Great Russians, name often used for the most numerous people of Russia to distinguish them from Belorussians and Ukrainians, with whom they form the Russian or R. branch of the Slav family. G. R. number about 100,000,000 and constitute the majority of the pop. in the Russian Federal Itap. as well as considerable minorities in all the other reps. of the U.S.S.R. They are largely the product of a mixture between N. and E. Russian tribes of the early Middle Ages with the neighbouring Finnish tribes.

Great Salt Lake, in NW. Utah, U.S.A., is 75 m. long and 50 m. broad, and has an area of 1469 sq. m., but fluctuates greatly in size. It lies 4197 ft above sea-level, and is situated in the E. part of the Great Basin near the foot of the Wasatch Mts. The lake is from 13 to 35 ft deep but its depth, like its area, changes greatly. It is fed by the Bear, Weber, and Jordan rivs., all of which are too small for navigation, but the lake has no outlet. Its waters contain chloride of sodium, chloride of magnesia, and sulphate of soda to a large extent, and the lake is a popular bathing resort; indeed, owing to the high sp. gr. of the water the human body will not sink in it. The manuf. of salt is an important industry. Glauber's salt occurs in large quantities in some parts of the lake. Antelope Is., the largest is., is 15 m. long, 4 m. wide.

Great Sandy Island, see FRASER ISLAND.

Great Schism, see SCHISM.

Great Seal of England, see SEAL.

Great Slave Lake, large lake in Canada, in the NW. Terr., about 300 m. long and 60 m. wide. It has an area of 10,000 sq. m., and forms 2 large bays, McLeod's Bay in the N. and Christie's Bay in the S. It is connected with Artillery Lake, Clinton-Golden Lake, and Aylmer Lake, and the Mackenzie R. flows out from it on the W. It contains trout, salmon, and other fish.

Great Southern Railway of Ireland, see CORAS IOMPAIR EIREANN.

Great War, The (First World War). For the hist. of the First World War and its causes, see WORLD WAR, FIRST; and for detailed reference to European diplomacy and policy both during and after the war, see also EUROPE. For detailed military operations, see FRANCE AND FLANDERS, FIRST WORLD WAR CAMPAIGN IN; GALLIPOLI CAMPAIGN; ITALIAN FRONT, FIRST WORLD WAR CAMPAIGN ON; MACEDONIAN CAMPAIGN (FIRST WORLD WAR); MESOPOTAMIAN CAMPAIGN (FIRST WORLD WAR); PALESTINE CAMPAIGN (FIRST WORLD WAR); RUMANIAN FRONT, FIRST WORLD WAR CAMPAIGN ON; RUSSIAN FRONT, FIRST WORLD WAR CAMPAIGN ON; AFRICA, GERMAN EAST, CAMPAIGN IN (FIRST WORLD WAR); AFRICA, SOUTH-WEST, *First World War Campaign*, etc. For accounts of prin. battles and sieges see also under the various names AISNE; AMIENS; ANTWERP; ARGONNE; CAMBRAI; CATRAU, LE; KUT-AL-AMARA; SOMME; VERDUN; YPRES. For naval operations

generally, see **WORLD WAR, FIRST** (**SOVEREIGNTY OF THE SEAS**), and *passim*; and for accounts of prin. battles, engagements, or operations in detail, see **DARDANELLES**; **CORONEL, BATTLE OF**; **FALKLAND ISLANDS, BATTLE OF**; **ZEEBRUGGE**; etc. For peace treaty provisions, see the names of the various treaties, a list of which is given under **PEACE TREATIES (FIRST WORLD WAR)**.

Great Western Railway, one of the first built of Brit. lines, was opened from London to Bristol in 1841 at a cost of about £5,000,000. The present W. Region of Brit. Railways corresponds roughly to the system of the former G.W.R., with H.Q. at Paddington station. The system stretches from London to Bristol, goes down to Weymouth, and has a boat service to the Channel Is. It also runs to Devonshire and Cornwall, striking away to Barnstaple on the W., to Exeter and Torquay in the S., on to Plymouth, Falmouth, and Penzance, and by boat to the flower-growing isles of Scilly. It runs to Gloucester, Birmingham, Chester, Liverpool, and Manchester, and also through S. Wales from Newport to Milford. Its broad gauge was abandoned in 1892.

Great Yarmouth, see **YARMOUTH**.

Greathead, James Henry (1844-96), engineer, b. Greshamstown in Cape Province. He migrated to England in 1859, and became a pupil of Barlow, from whom he learned the shield system of tunnelling which he made use of in the construction of the Thames Tunnel. After this he devoted his time to the improvement of his 'shield,' and it was used in the tunnelling of the tube railway, later known as the City and S. London. He was also engaged on the Waterloo and City and the Central London Railways.

Greatrakes, Valentine (c.1629-83), 'touch doctor,' b. in co. Waterford, Ireland. He served as a soldier for some years, and was also for a time a magistrate. He believed himself to have the gift of curing the king's evil (q.v.), and in 1666 pub. a brief account of himself and his cures.

Graevae, John (1602-52), mathematician, b. Colomere, Hants. He was educ. at Balliol College, Oxford, and in 1630 was appointed prof. of geometry in Gresham College, London. He visited Egypt in 1637 and made a very accurate survey of the Pyramids, of which he pub. a description in 1646. In 1643 he was appointed to the Savilian professorship of astronomy at Oxford, but was expelled from both this and the post at Gresham College in 1648 because he was a royalist. Among his writings, besides those in *Philosophical Transactions*, are *Pyramidographia; or a Description of the Pyramids in Egypt*, 1646, *Elementa Linguae Persicae*, 1649, and *A Description of the Grand Signors Seraglio*, 1650.

Graevae, see ARMOUR.

Grebes, diving birds (family Podicipidae, order Podicipiformes) which usually frequent rivs. and fresh-water lakes in the summer and the sea in the winter. They

have broad, flat feet, and the toes are lobed and bear separate membranes which are joined only at the base. The wings are short and rounded and there is practically no tail. The legs are placed far back and the birds stand upright like the penguins. The sexes are similar. The best-known Brit. species is the Little Grebe or Dabchick, which is found also in Scotland and Ireland. The Great Crested Grebe, *Podiceps cristatus*, the Red-necked Grebe, *P. griseigena*, the Horned Grebe, *P. auritus*, and Black-necked Grebe, *P. nigricollis*, are also found at definite seasons of the year. G. are useful for their plumage, but are so timid that they are extremely difficult to catch.

Greece, El, see **THEOTOCOPULI**.

Greece, European kingdom situated in the S. extremity of the Balkan peninsula. For an account of G. in the classical period, see **GREECE, ANCIENT**, an article covering the hist., archaeology, and legal system of anc. G.; see also **GREEK ART**; **GREEK LANGUAGE**; **GREEK LITERATURE**; **GREEK PHILOSOPHY**. The Greeks of classical times called themselves Hellenes and their country Hellas. But the appellation Hellenes, designating the inhab. of the peninsula as opposed to barbarians in general, is of a comparatively late origin. In the Homeric epics the Hellenes are a people of Phthiotis in S. Thessaly. The names Graeci and Graecia, as universal names for the people and country of G., were used only by the Romans, who extended to the whole country the name of the first tribe they encountered on the Gk mainland—the inhab. of Dodona in Epirus. In its widest and loosest application Hellas signified in anc. times the abode of the Hellenes, and thus embraced mainland and colonies alike. More specifically, Hellas was the land which, prior to the Macedonian conquests, lay S. of the Cambunian and Ceraunian Mts, and included the following dists.: Epirus, Thessalia, Acarnania, Aetolia, Doris, Locris, Phocis, Boeotia, Attica, and Megaris (in N. G.); and Corinthia, Sicyonia, Phlasiata, Achaia, Elis, Messenia, Laconia, Cynuria, Argolis, and Arcadia (in S. G.).

The demarcation of the frontiers of the modern state has been provocative of fierce and protracted contention. In July 1832, by the settlement concluded at Constantinople between Great Britain, France, Russia, and Turkey, the N. boundary line of G. was drawn from the Gulf of Arta to the Gulf of Volo. The Cyclades, the Is. of Euboea, and the N. Sporades were included in the kingdom. Great Britain ceded the Ionian Is. in 1864. The proposal of the Berlin Conference in 1880 to transfer to G. Thessaly and S. Epirus was rejected by the Turks. In 1881 the boundary line was drawn from Platamona to Mts Kritiri and Zygos, whence it followed the R. Arta to its mouth. A slight readjustment of the boundary was effected in 1897, by which G. ceded to Turkey about 578 sq. m. of her N. frontier lands. G. in 1912 had an area of 25,223 sq. m., consisting of

continental G. and the Peloponnesus, Euboea, and the Aegean Is., the Cyclades and the Sporades, and the Ionian Is. of Corfu, Zante, etc. The pop. of this area (1920) was 2,800,164. The Balkan wars, 1912-13, gave G. Macedonia, Epirus, and the Aegean Is. of Crete, Mytilene, Samos, and Chios. The area of the new ter. was 20,617 sq. m. and the pop. 2,646,913. The Dodecanese Is. were incorporated in 1948. The total area of G. is now estimated at 51,182 sq. m., of which the mainland accounts for 41,328 sq. m., and the is. for 9854 sq. m. According to the last census (1951) the

conditioned to a great extent by the geographical configuration of the land and its singular endowments. Occupying the most central position of the anct world. G. enjoyed easy communication with the Orient and Occident. The is. of the Aegean and Ionian seas were stepping-stones to maritime enterprise. Broken by innumerable harbours, creeks, and bays, the coastline is phenomenal, its total length being out of all proportion to the area of the interior. The determining feature of the country is the mt system. The great Pindus chain forms the backbone of N. G., and its ramifications inter-



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THE THEATRE AT DELPHI, ON THE SW. SPUR OF MOUNT PARNASSUS IN PHOCIS

total pop. was 7,632,800. In 1955 it was estimated at 7,972,700. The pop. of Athens is 565,000, of Salonica (renamed Thessaloniki in 1927) 217,000, and of the Piraeus 184,800. In 1923 a free zone in the harbour of Salonica was ceded to Yugoslavia for 50 years. Since 1932 there has been a free zone in the Piraeus, covering 192,800 sq. yds of land, with a frontage on the sea of 2600 yds and nearly half a m. of railway. The areas and pop. of the geographical divs. of G. are Central G. and Euboea, 9640 sq. m., 2,287,000; Thessaly, 5400 sq. m., 629,000; Ionian Is., 865 sq. m., 229,000; Cyclades, 1050 sq. m., 126,000; Peloponnesus, 8360 sq. m., 1,129,000; Macedonia, 13,280 sq. m., 1,701,000; Epirus, 3570 sq. m., 331,000; Crete, 3200 sq. m., 462,000; Dodecanese Is., 1022 sq. m., 121,500; Thrace, 3315 sq. m., 337,000.

Physical features.—The character of the Hellenic race and the influence which it has exerted on the world's hist. have been

lace the whole area. The mts of Morea (Peloponnesus) are an independent system, and radiate in all directions from the central plateau of Arcadia. It is the partial submergence of these mt systems that has produced the deep indentations of the coastline of G. and the fringes of systematically grouped is. The basis of these mts is hard limestone, hence the precision of outline and the parallelism of the ridges. The nature of the drainage system is peculiar owing to the unique character of the mt system. The course of the rivs. is short and torrential, and only the longer streams, such as the Alpheus, Peneus, and Sperchius, possess a perennial water supply. No riv. of G. is navigable. The mts closely hem in the lake basins, from which the waters find no outlet, except by subterranean passages. G. in her early hist. was subject to severe volcanic action, and in modern times earthquakes are frequent.

Climate.—The mts have also important

effects on the climate, tempering the vehemence of the S. sun and aerating the country with refreshing breezes. The exceptional variety in elevation also effects rapid transitions from heat to cold. Spring in G. is a season of short duration. The Etesian winds blow steadily in the months of early summer, but these are replaced later by the inclement blasts of the sirocco. Autumn is humid and unhealthy, and accompanied in low-lying dists. by visitations of malarial fever. Winter is crisp and temperate.

Flora.—The flora of G. is not so exuberant and varied as that of Italy and Syria. The geological structure, of which limestone and metamorphic marbles are the predominating features, is not favourable to rich vegetation. Four zones are usually recognised: (1) Below 1500 ft: olives, cypress, myrtle, oranges, dates, almonds, figs, poplar, tobacco, cotton, pomegranates, etc.; (2) below 3500 ft and above 1500 ft, forest zone: oak, chestnut, etc.; (3) below 5500 ft and above 3500 ft: the region of the beech and pine; (4) above 5500 ft, Alpine zone: small shrubs and mosses.

Religion and Education.—By the terms of the constitution of 1863, as amended in 1911 and 1952, the Gk Orthodox Church was declared the religion of the State, but complete toleration and liberty of worship were guaranteed to all other sects. There were, according to the census of 1951, 7,470,000 Orthodox, 28,400 Rom. Catholics, 7000 Protestants, 6300 Jews, 112,700 Muslims. The gov. of the Orthodox Church is vested in a permanent council called the Holy Synod, consisting of the metropolitan of Athens and 12 metropolitans, who, during their term of office, must reside at Athens.

All children between the ages of 7 and 12 years must attend school, but the law is not well enforced in country dists. For higher studies there is a National and a Technical Univ. at Athens and one at Salonika (Thessaloniki): an agric. superior school: the School of Fine Arts; and a superior private school of political sciences. The Ministry of Education is also charged with the Service of Antiquities, managed by an archaeological council, which is responsible for the conservation and reparation of ancient monuments, the upkeep of museums, and the conduct of excavations. There are Brit., Fr., and Amer. schools of archaeology in Athens, which, with the aid of gov. grants, encourage scientific research of all kinds (see GREECE, ANCIENT, *Archæology*).

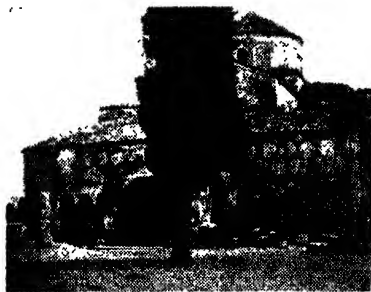
Industry.—Agriculture is the staple industry of G. The chief products are wine, currants, olive oil, and tobacco. Sheep and goats are pastured in great numbers in the peninsula. Peasant proprietorship predominates. The celebrated mines at Laurion in Attica yield iron, manganese, lead, and zinc. Other mining products are magnesite, lignite, sulphur, alum, and emery. Marble is found in Paros, Attica, Thessaly, and the Cyclades.

Communications.—There are some 2000 m. of railway, some of which is metre gauge. There is a ship canal through the Isthmus of Corinth (q.v.). There is an air service connecting Athens, Volos, Larissa, Salonika, Cavalla, Janina, Corfu, Rhodes, and Crete. The chief airport is Hellenikon (Athens).

Defence.—Military service in the army is universal and compulsory between the ages of 21 and 50. The normal period of service with first-line units is 2 years. The ann. intake of recruits is usually about 50,000. The total strength of the army is about 102,000. The navy has 80 ships, about half of which are on loan from Britain. It includes 1 cruiser, 14 frigates, 2 fleet destroyers, and 4 submarines. The air force has a strength of 15,000 men and has 6 operational squadrons of fighter bombers, 6 training squadrons, and 2 transport squadrons. After the Second World War the Gk services were trained first by Brit. and then by Amer. missions.

History.—For the early hist of G., see GREECE, ANCIENT. By the closing years of the 4th cent. AD incursions of Gothic raiders were beginning to sweep over G., leaving destruction in their train. Later invasions were made by both Goths and the Slavonic tribes, and the hist. of the Gk states becomes obscure. In the 13th cent. Athens fell into the hands of the E. emperor Baldwin. Subsequently it was governed by Delves of the house of Aragon, and at his death it fell into the hands of Bajazet, sultan of the Turks. It was afterwards held by the Spaniards and the Venetians, but in 1460 the peninsula was entirely subjugated by the Turks. The Venetians invaded G. towards the close of the 17th cent., recovered Athens, and occupied a considerable portion of the mainland and some of the is. But the Venetian central power was not strong enough to maintain its control, and in 1718 G. passed once more under the Ottoman yoke. Peter the Great of Russia projected a campaign to free the oppressed states, but did not live to carry out his schemes. The assistance sent by the Empress Catherine was inadequate and ineffectual. The succession of Ali Pasha made the condition of the Gk people more hopeless than before. In 1814 a society of young Gk patriots, called the Hetairia, was formed at St Petersburg. The objects of this society were ostensibly literary, but were really political, and it was this society that was largely instrumental in fanning the flames of rebellion throughout G. The educated classes of Europe, nurtured in the classical glories of G., were increasingly sympathetic. In 1821 Yusuf Pasha defeated the insurgents at Galatz, and in the same year the 'sacred battalion' under Jordaki was annihilated. But in the Morea the cause of freedom had greater success. In Sept. 1821 a constitution was formulated by the independent party at Missolonghi, applicable to W. Hellas; later a similar constitution was drafted at Salona, embracing the E. states, and in

Dec. the constitution of Peloponnesus was framed. In 1823 a final constitution comprehending the whole of G. was adopted by the National Assembly convened at Astro. But Turkey made a last desperate effort to annul the decrees, and in 1825 an Egyptian army, under Ibrahim Pasha, was dispatched to the Morea. In a few months the work of the patriotic party was all but undone, and only the combined intervention of European powers rescued it. In the decisive engagement of Navarino (Oct. 1827), the allies destroyed the combined Turkish and Egyptian fleets. By the protocol of 1830 G. was declared an independent kingdom and her boundaries were defined. The arrangement was in many



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THE BYZANTINE CHURCH AT ORCHOMENOS
(DOUDOURVANA), IN BOROZIA

This ancient building of the convent of the Panagia, founded in 874, may occupy the site of the Temple of the Graces mentioned by Pausanias

respects unsatisfactory; it excluded Acarnania from Gk ter. and a great part of Aetolia and Thessaly; a Turkish barrier interrupted communications between G. and the Ionian Is., while Candia, Samos, etc., were not included.

The liberated state was at first governed by a national assembly, but the president, Capo D'Istrias, assumed autocratic powers, and sedition culminated in his assassination. Subsequently the powers offered the throne of G. to Prince Leopold (afterwards king) of Belgium, but he refused it. The crown was then given to Otto (q.v.), son of Ludwig I of Bavaria. Throughout his reign discontent was rife, and an insurrection in 1862 resulted in the deposition of the king. George, second son of the king of Denmark, was then chosen king, and the Ionian Is., at that time under Brit. protection, were ceded unconditionally to the kingdom. By the Berlin Congress of 1878 G. was promised a modification of her frontier, and in 1881 a readjustment was accepted. G. acquired Thessaly, S. of the N. watershed of the Salambria, and the tract of land bordered by the Arta R. The allocation was not

considered sufficient by the Greeks, who demanded Crete, and a war with Turkey began in 1897. The war was short-lived, and disastrous to the Greeks, and on the intervention of the powers an armistice was concluded. By the treaty of Constantinople G. was forced to pay an indemnity, to submit to the readjustment of her frontier, and to accept the control of the powers in financial affairs. But Crete was granted autonomy under a Gk prince. Venizelos (q.v.) came to the fore with the movement in Crete to break away from Turkish rule and unite with G. In May 1910 a Cretan assembly was set up and Venizelos became president of the provisional gov. Later in the year he was elected to the Gk Parliament, and in Oct. became Premier. He set to work to form a Balkan league strong enough to withstand Turkey. A Serbo-Bulgarian treaty was followed by a Graeco-Bulgarian treaty, and in the War of Liberation the strength of the league was proved by the complete collapse of the Turks (*see BALKAN PENINSULA; BALKAN WARS*). On 30 May 1913 Crete was ceded to G. by the treaty of London, which ended the war between Turkey and the Balkan states. When, however, the alliance was broken by the treachery of Bulgaria, G. received still further extensions of ter. by the treaty of Bucharest, which ended the second Balkan war.

In 1913 George I of G. was assassinated in Salonika by a fanatic, and was succeeded by his son, Constantine I. Venizelos endeavoured to reorganise G. internally, but the outbreak of the First World War in 1914 proved how short-lived had been the hope of a Balkan settlement. At the beginning of the war G. remained neutral. Venizelos, however, was for immediate intervention on the side of the Entente. The differences between king and Cabinet caused Venizelos to resign in Mar. 1915. The nation was split between Royalists and Venizelists, and towards the end of 1916 Venizelos set up a provisional gov. at Salonika and endeavoured to recruit a Gk army to aid the Allies in the offensive which Gen. Sarrail was forced to take against the Bulgarians during Aug. In June 1917 France and Great Britain, who had guaranteed to ensure the Gk constitution, decided to act in their capacity of 'protecting powers' Jonnart, former governor of Algeria, was dispatched to Athens to demand the abdication of Constantine. An ultimatum and a display of force secured this, and Constantine abdicated in favour of his second son, Alexander, and left G.

Venizelos was soon officially recalled to power, and G. entered the war on the side of the Entente. By the treaty of Sevres (10 Aug. 1920) G. was awarded practically all Thrace outside Constantinople and a mandate over Smyrna and the hinterland. In Oct. 1920 Alexander d., and the elections in the following month resolved themselves into a struggle between the Venizelists and the Constantinians. Venizelos was defeated and left G. A

plebiscite held shortly afterwards favoured the return of Constantine. The result was that in the war between G. and Turkey over the possession of Smyrna (see GREECO-TURKISH WAR), G. was deserted by the powers, France favouring the Turks. G. was forbidden to attack Constantinople, and on 22 Sept. 1922 the Turks captured Smyrna. This was followed by the second abdication of Constantine, who retired to Palermo and d. in the following year.

By the treaty of Lausanne, 1923, G. lost E. Thrace, the boundary between G. and Turkey being fixed at the Maritza R. Shortly after, on 27 Aug., G. was embroiled with Italy over the murder of Gen. Tellini, It. delegate, with the other members of the commission investigating the Albanian boundary, while on Gk soil. Following an It. ultimatum Corfu was bombarded, and although the Italians were forced by the League of Nations to evacuate Corfu on 27 Sept., G. paid a large indemnity. An unsuccessful counter-revolution against the 'revolutionary gov.' brought the monarchy into discredit, and in 1924 G. was proclaimed a rep.

The rep. endured with varying fortunes until 1935, when, following a plebiscite organised by Gen. Kondylis, the monarchy was restored by an overwhelming popular mandate and George II was recalled. The king, whose restoration was due not so much to any access of enthusiasm for the monarchy as to the hope that it might end a decade of unsuccessful democratic experiments, insisted, in the interests of national unity on a general amnesty and a general election. Kondylis, however, demanded the exclusion of Venizelos, but these mutual rivalries were fortuitously extinguished by the death in 1936 of Venizelos, Kondylis, and Tsaldaris, and Metaxas (q.v.) became Premier. In the following year, Prince Paul, brother of the king and heir presumptive, married the Princess Frederika, daughter of the duke of Brunswick. Metaxas now set up a virtual dictatorship. Parliament being dissolved and political parties being suppressed, and in 1938 he was made Premier for life. A treaty was signed (April) with Turkey to subsist for 10 years, under which each country undertook to remain neutral if one of them were attacked, while each would prevent the transport of troops or munitions through its ter. to any state attacking either of them. At the same time Gk and Turkish troops entered the Thracian frontier ter., which for 15 years had been demilitarised under the treaty of Lausanne (q.v.).

In 1939, when Germany was menacing the whole of Europe, Chamberlain, the Brit. Prime Minister, announced that in the event of any action threatening the independence of G. the Brit. Gov. would at once lend the Gk Gov. all the support in their power—a guarantee which was the more readily given on account of the importance of the Gk naval bases in the E. Mediterranean. On 28 Oct. 1940 Mussolini, evidently confident that the

It. army under Graziani, based in Libya, could advance at leisure to the invasion of Egypt, suddenly launched a treacherous attack without a declaration of war across the Albanian frontier into G. But when the small Gk Army proceeded to defend its ter. with sublime courage and tenacity, the world was soon amazed to see the It. forces hurled back in full retreat. Mussolini had expected either surrender or a merely nominal resistance, but he found the country united and the Gk Army full of patriotic fervour. A small contingent of the R.A.F. had been sent to co-operate with the Gk defence and, on 11 Nov., while the Italians were still being pressed steadily back through the Albanian mts. the Fleet Air Arm delivered a crippling blow at the main It. fleet lying in Taranto harbour, thereby reversing the balance of naval power in the E. Mediterranean. The Brit. Gov.'s air and naval assistance had been sent to the Greeks within 3 days of the It. attack, and the result was that Mussolini found that he had presented the Brit. forces with a unique opportunity of striking at the It. Fleet from Gk bases. Under the supreme command of Gen. Papagos (q.v.) the Gk Army displayed brilliant tactical skill in mt warfare, turning one position after another by seizing points of vantage which dominated it. By the end of the year they had conquered nearly one-third of Albania and were approaching Tepelini.

Heavy reinforcements, however, were now reaching the It. armies and for 2 months the position remained essentially unchanged. In Mar. 1941 the Italians launched a desperate offensive against the Gk lines, yet no part of the defence yielded ground, and it can hardly be doubted that if the Greeks had had no other foe than the Italians they would have successfully defended their independence; for what they lacked in naval and air power was supplied by the co-operation of Brit. naval and air forces. But in April the Ger. armies crossed the Bulgarian frontier into Macedonia, and though a gallant stand was made by the Gk forces, aided by a Brit. expeditionary force of some 60,000 men, the odds, both military and political, were so overwhelming that in a few weeks the whole of G. was in Ger. hands and the Brit. forces had been evacuated. The practical value of sending a Brit. army to G. was later disputed by Papagos (see his book, *The Battle of Greece*, in the bibliography at the end of this article). (For details of the campaigns, see GREECE, SECOND WORLD WAR, CAMPAIGN IN (1941).) The spirit of the Gk people rose to incredible heights of courage and self-sacrifice in their struggle against Italy, and when the Germans attacked they did not falter. But owing to internal dissension, the Gk Gov. was by no means steadfast, and certainly deteriorated after the death of Metaxas (1941). From the moment when Yugoslav resistance collapsed the Gk Gov. seemed to resign itself to defeat. In mid April a depressing report of the military situation given to the Cabinet

by Papagos caused the Premier, Korizis, to commit suicide.

King George and his ministers withdrew to Egypt and finally reached England in Sept. Ger. forces entered Athens on 27 April and set up a puppet gov. There followed a period of dire privation for the cap. and for the whole country. Crops and stores of foodstuffs were requisitioned by the Germans, who issued occupation paper money to the amount of 1,000,000,000 marks to enable their troops to observe the formality of payment. Despite arrangements made by the Allies to get food into G. people were now dying of starvation to the number of 600 a day. It. troops entered Athens on 25 June and formally took over the occupation of the country from the Ger. garrison; but the Germans continued to control all communications, the coastline, and the aerodromes, besides being in control of Crete. At the end of the first 15 months of the Axis occupation of G. some 100,000 of a pop. of 1,000,000 in Athens and the Piræus had perished. Guerilla warfare was waged incessantly throughout 1942, particularly in Macedonia. Other groups operated in the Peloponnesus, among them being a number of Brit. soldiers, while in Crete Brit. troops who had not been able to escape were co-operating with the Gk resistance movement. Sabotage against Axis troops on railways and supply stores was rife despite reprisals. An agreement between Great Britain and the exiled (Gk Gov. was signed on 1 Mar. respecting the organisation and employment of Gk armed forces, and the 2 govts. agreed that among the objects of the war were the 'complete liberation of Greece and the re-establishment of her freedom and independence.' Lend-lease agreements were also made between Britain and G., and between America and G. But the following year saw the tragedy of the enemy occupation, with its incidents of famine, oppression, and reprisals, aggravated by the miseries of a people divided against itself.

In the guerilla warfare differences of political opinion began to undermine the unity of purpose of the various bands. During the iron rule of Metaxas the old cleavage of the people into Monarchists and Republicans had tended to weaken with the restoration of the monarchy; but when the king left G. again, though under force of circumstances, the old animosities were revived against him for having kept Metaxas in office. The king tried to smooth over differences by issuing declarations promising, when he should return, to consult the will of the people on the political and constitutional status of the country. An attempt to counteract the effects of this strife among the 'Antartes' (irregular bands) on their resistance to the Axis invaders was made by the introduction of Brit. liaison officers into G., and on 2 July 1943 it was announced that the Gk guerilla bands had come under the supreme allied command in the Middle East; but there none the

less remained in the Antartes no fewer than 5 separate organisations, the chief being E.L.A.S. (National Popular Liberation Army) with a strong Communist element; the E.D.E.S. (National Democratic Gk Army); and E.A.M. (National Liberation Front). Yet in spite of these feuds between the bands of the Antartes the guerilla struggle against the Axis forces was maintained throughout the year, with the bands in virtual control of the region lying between Thessaly, Macedonia, and Epirus. With the collapse of Italy the Germans revoked the div. of G. into Ger. and It. zones of occupation and resumed control of all communications. The differences of political opinion, which early in 1943 had led to armed strife between rival bands of guerillas, were continued into 1944, but during Feb. Brit. liaison officers succeeded in getting their avowed representatives to agree to end hostilities and co-operate in the fight against the Germans. Yet the unrest in the Gk forces remained and there were mutinies in both the army and navy based in Egypt. Papandreou, leader of the Republican Socialist party, escaped at this time from G. and went to Cairo to urge the cause of national unity. In June the king entrusted Papandreou with the formation of a gov., but in the following month the various parties drifted further apart. By Oct. the S. areas of G. were nearly free of Germans, although in the N. fighting was still going on between the national bands. On 14 Oct. Athens and the Piræus were occupied by Brit. troops, and on Christmas Day Churchill, accompanied by Anthony Eden, flew to Athens to try to compose Gk differences and end the civil strife.

Though G. had now been liberated and national belligerent resistance was no longer necessary, resistance had resulted in the grouping of a great many parties—before the time of Metaxas there had been literally scores of political groups—into E.A.M. and that party, decisively left-wing, now remained united as the largest political party. The fact that E.A.M. was openly against the king's return was responsible for a wave of monarchist feeling among the nationalists or right-wing elements, and E.A.M., favouring a republican form of gov., now pressed for an immediate vote so as to ensure a decision while its armed forces were in existence. The Papandreou gov., with the support of Lt.-Gen. Sir Robert Scobie, commander-in-chief of the Gk Army, then announced their determination to disband these forces by 10 Dec. and to re-form the Gk Army to supersede the resistance groups as the regular armed force of the nation. At the end of Dec. the king appointed Archbishop Damaskinos regent of G. Additional Brit. troops were now sent to Athens, and street by street the cap. was cleared of irregular troops. A peace agreement was signed on 12 Feb. 1945. One of its clauses was that a plebiscite should be held to decide finally on the constitutional question, under the supervision of the

Allies. But this agreement did not bring political harmony. E.A.M. complained that the entire state machinery was manipulated by Fascists and that the whole resistance movement was being ruthlessly persecuted, while the Communists levelled their attacks against the presence of Brit. troops in G. No fewer than 6 Cabinets held office during 1945. In Oct., to end the deadlock, the regent, Damaskinos, himself assumed the office of Premier, but handed over the gov. to Kanellopoulos, who in his turn gave way

The Brit. Labour Gov., in 1947, decided that its financial commitments to G. must end after 31 Mar. and further that the Brit. troops would be reduced and eventually withdrawn. Truman then asked Congress for authority to give immediate economic and financial aid to both G. and Turkey, on the ground that the foreign policy and national security of the U.S.A. were involved, and that the U.N. and its related organisations were not in a position to extend help of the kind that was required.



Camera Press

THE GUERRILLA WAR, 1947

King Paul of Greece inspects a frontier post in Northern Greece.

to Sophoulis, the 86-year-old leader of the 'Liberal' party. The majority of the ministers in this Cabinet, which included Tsouderos, head of the Gk Gov. in exile from 1941 to 1945, as vice-premier, were old Venizelists. The apparent hopelessness of the political situation had led the archbishop to announce his impending resignation of the regency, but on the appeal of the Brit. and Amer. Govs. and of the new Gk Gov. he withdrew his resignation (Nov.).

In 1946 in some areas, especially in the N., armed bands continued their activities despite the truce, but on the whole the civil warfare seemed to be dying down. Meanwhile, the Royalist Greeks succeeded in gaining control of the stop-gap gov. and eventually a new plebiscite once again resulted in a majority in favour of the return of the king (*see* GEORGE II) who soon afterwards left England for Athens.

In the midst of these preoccupations the king d. suddenly and was succeeded by his brother, Paul. In 1947 the civil war flared up again on a menacing scale. That G. was eventually saved from Communism was undoubtedly due in great measure to the aid the gov. received from America, which in the end more than outweighed the help which the Communist insurgents were receiving from Russia and her satellites. Untold hardship was caused to the people in N. G. by the continual warfare, large numbers of Greeks being deported to Communist countries; while the origin of the country's unceasing economic difficulties also lay in the civil war that still showed no signs of ending.

By 1949 the internal situation was again critical; the rebels appeared to be gaining ground, were in control of N. G. and were slowly strangling the country's

economy. Papagos (q.v.) was recalled from retirement and appointed commander-in-chief of the armed forces, with very wide powers. Eight months later (Aug. 1949) the Gk Communists admitted total defeat, Papagos's brilliant successes against them having been fortuitously helped by Tito's quarrel with Russia.

From 1951 until his death in 1955 Papagos dominated Gk politics, his Gk Rally party gaining an overwhelming majority in the elections of 1952. Though his rule was authoritarian, the mass of Greeks welcomed it as providing stability after all the years of enemy occupation, civil war, and vacillating coalitions; and Papagos had the personal appeal of a national hero. The economy of the country revived; in 1953 a treaty of friendship was signed between G., Turkey, and Yugoslavia, and the Greeks who had been taken into Yugoslavia during the civil war were repatriated. In 1951 G. became a member of N.A.T.O.

But from 1953 onwards Gk politics became increasingly dominated by the Cyprus question, the court and gov. soon identifying themselves with the popular desire for the union of Cyprus with G. By 1955 G.'s relations with Britain and Turkey were consequently extremely strained; and in 1956 G. announced that the Radcliffe constitutional proposals for Cyprus, though they went far to meet earlier Greek and Gk-Cypriot views on the question, were unacceptable to her. The Karamanlis Gov., in power since Oct. 1955, has attempted to deal realistically with the continuing problem of inflation; but popular attention has generally been focussed on the Cyprus issue. G.'s prin. territorial acquisition since 1939 has been the incorporation of the Dodecanese Is. into the Gk kingdom, 1948.

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Greece, Ancient. *History.*—According to the Gk historians the earliest inhab. of Hellas were the so-called Pelasgians, but the information afforded by the ancients on the subject is scant and vague. There is mention of the name Pelasgian in Homer, but it appears to be merely a tribal name designating the inhab. of Thessaly, Epirus, and Crete. For our knowledge of the inhab. and civilisation of prehistoric Greece we are therefore dependent on the more certain witness of archaeology, and in recent years Gk archaeological evidence has been supplemented to a remarkable extent. Excavations at Knossos (Cnosus) (q.v.) in Crete (q.v.) have revealed the earliest (Minoan) stages of a civilisation known as Aegean (see AEGEAN CIVILISATION). This civilisation is the oldest in Gk hist. of which we have knowledge. Its most flourishing period was between 2000 and 1400 BC. Prehistoric Knossos was a city of massive structure in which the fine arts fl., and had reached a remarkably high stage of development (specimens of Minoan pottery are of exceptional beauty and grace) and in which the art of writing was known. This last fact is of great importance, as until recently the art of writing in Greece was supposed to be post-Homeric.

The next age of Gk civilisation on which archaeology has thrown light is represented by excavations at Mycenae, Tiryns (qq.v.), and elsewhere. Its finest period was about 1400-1000 BC. The characteristic feature of these splendid cities is their massiveness and solidity. Pausanias relates that tradition attributed the building of Tiryns and Mycenae to the Cyclopes (hence the expression 'Cyclopean walls' used to denote structures of this massive type), thus testifying to the gigantic edifices of prehistoric times as contrasted with the masonry of a later date. The jewellery, pottery, and weapons excavated from these ancient cities are of rare beauty. Iron was practically unknown at this time; its use is more extensive in the Homeric age, and therefore Homeric civilisation is probably post-Mycenaean. But a series of invasions swept over Greece, and a newer civilisation displaced this early culture.

In the latter half of the 11th cent. BC the Dorians entered Greece. They were a coarser, harder stock than the peoples they conquered; but they brought to Greece a new vigour and a new robustness which when toned and harmonised by the finer influences of the land produced that civilisation which is the world's marvel for all time. These great migrations which swept over Greece created a congestion of the pop. which was eventually relieved by widespread colonisation. The Aeolian migrations estab. settlements in Lesbos, Tenedos, and the Mysian mainland. The Ionian migrations from N. Peloponnesus colonised Chios, Samos, the

Cyclades, and the centre of the Lydian coast of Asia Minor. The Dorians also enlarged their frontiers and occupied Melos, Rhodes, Cos, etc. During the 8th and 7th cents. BC important changes took place in Gk civilisation. Various communities became federated and some states (notably Athens and Sparta) began to exert a formidable supremacy over their neighbours. Religious union found

but subordinated all interests to militarism.

In the 6th cent. BC commercial and intellectual development among the Ionians reached its zenith and quickly receded. On the Gk mainland new economic evils made their appearance. The rapid development of mercantile activity caused a violent displacement of occupations, and debtors suffered enslavement. As champions of these debtors the tyrants in most states first estab. their power. Thus in Athens Solon attempted to alleviate the distress of the citizens by his famous legislation (594-593), but the real object of his life-work (the confirmation of the political freedom of the Athenians) was reversed when his relative, Peisistratus (q.v.), just ruler though he was, estab. himself as tyrant (q.v.) of Athens (561). In 514, however, Harmodius and Aristogiton freed the city from tyrannical gov. Cleisthenes in 507, by an equitable distribution of the people in tribes for voting purposes, paved the way for the Athenian democracy. The great work of Cleisthenes was his constitution (510-508), the results of which were not to be ephemeral; they made themselves felt through the whole of the subsequent hist. of Athens, and were the foundation on which all succeeding legislators built.

The 5th cent. BC was the most momentous period of Gk hist., for during this period the E. came into decisive conflict with the W. for the domination of the anc. world. Early in the century the Ionians revolted from the 'great king,' Darius (q.v.) of Persia. This ill-organised revolt resulted in the destruction of Miletus and the subjugation of the Asiatic Greeks by the Persians. Athens, being an Ionian city, had sent aid to her trans-Aegean kinsmen, and Darius resolved to punish Gk interference and make an example of the Athenian state. The Persian Army destroyed Naxos and Eretria, but in Attica the ill-organised hosts of barbarians were no match for the little band of finely trained Attic hoplites (heavy-armed infantry), and the plain of Marathon was strewn with Persian dead (490). The palm of victory was won for Athens by the genius of her leader, Miltiades (q.v.). Darius heard with consternation of the annihilation of his vast army. In the midst of his preparations for a second invasion he was cut off (486); but Xerxes (q.v.), his son, mustered bodies of soldiery from all parts of his extensive dominions, and the combined forces of the E. were arrayed once more against the W. The overwhelming numbers of the barbarians terrified the Thessalians, Locrians, and Boeotians into offering earth and water as tokens of submission, but Athens and Sparta stood firm. A small force under Leonidas, king of Sparta, was dispatched to guard the pass of Thermopylae and keep the countless hosts at bay, but through the treachery of the miscreant Mallian Ephialtes, the little body of Spartans was surprised from the rear and was slaughtered



P. A. Hutton

MYCENAE: THE 'TREASURY OF ATREUS'

A good example of the bee-hive tomb, in an almost perfect state of preservation. The doorway measures 18 ft high by 9 ft wide.

expression in the institution of *Amphictyons*: the Olympian, Nemean, and Pythian games; and the pan-Hellenic dictatorship of the Oracles (q.v.).

Gk commerce began at this time to outrival Phoenician enterprise. In maritime activity the Corinthians were the foremost state. The Aeginetan system of weights and measures was adopted and coinage was introduced from Lydia, 2 epoch-making innovations which are attributed to Pheidon (q.v.), king of Argos (7th cent. BC). During this period monarchies were overthrown in most states by oligarchies, which again were displaced by tyrannies. The constitution of Sparta (q.v.) developed by a unique process; it continued to be a monarchy,

to a man (480). It was the genius of Themistocles (q.v.) that saved Greece and inspired Athens to seek her own safety and that of all Greece on the sea. In the narrow strait of Salamis the Gk fleet encountered the unwieldy ships of the Persians, and the defeat of the barbarians was so severe that Xerxes resolved to quit G., leaving Mardonius, his captain, to complete the campaign (480). In the spring of 479 the Persians devastated Attica and razed Athens, but suffered decisive defeat at Plataea. In the summer of the same year the united fleets of Athens and Sparta destroyed the remnant of the Asiatic fleet at Mycale near Miletus. Pausanias (q.v.), the Spartan victor of Plataea, at first led the combined fleets, but the honours and wealth which had fallen to him aroused in him ambition. He aimed at becoming tyrant of all Greece, and was ready to purchase his opportunity by serving the barbarian whose armies he had routed. But the fleet mutinied and put itself at the disposition of the Athenian leaders, Aristides and Cimon (qq.v.), and the would-be tyrant, stripped of his power, was summoned home to stand his trial. Thus, by the sustained courage of Sparta and the altruistic intrepidity of the Athenians by land and sea the powers of the E. were broken. In this war, as never before, Greece realised her significance, and her sev. states were forced to combine and recognise their true unity. The example of high moral calibre exhibited by the Gk leaders during the war became a great inspiration in the art and politics of Greece. The Greeks, having expelled the Persian invaders, freed their kinsmen across the Aegean from subjugation to Persia, and received them into alliance.

In 477 Athens formed the Delian League, and a treasury of the alliance was estab. in the temple of Apollo at Delos. The cities were required to furnish ships or the equivalent in money towards the maintenance of the combined fleet, and the formation of this allegiance was the nucleus of the Athenian Empire. Sparta meantime still retained her position as leader of the Peloponnesian confederacy. Thus the Gk powers, united by the common danger of the Persian invasion, became divided through antagonism of the rival confederacies for the hegemony of Greece. Within the city of Athens the tides of democracy were rising fast. Themistocles was the champion of this popular movement, first organised by the genius of Cleisthenes. The mantle of Cleisthenes had first fallen on the shoulders of Ephialtes, who diminished the auct. power and prestige of the Areopagus, the pillar of aristocracy (461). By the policy of Pericles (q.v.) this dictatorial court was robbed of all but nominal powers. By the removal of the confederate treasury to Athens and the appropriation of the funds for civic purposes, the relation of the Athenians towards their allies became avowedly autocratic. In the period 458-445 Athens was at the height of

her power. There is no knowing where the extension of that power would have stopped, if the disaster of the Gk defeat in Egypt—the massacre of Protopitis (454)—had not then intervened to weaken its growth. By the close of 452, through the mediation of Cimon, a truce for 5 years was made between Sparta and Athens. Freed for the moment from their quarrel with Sparta, the Athenians turned to avenge their rout in Egypt, and the Phoenician fleet suffered defeat off Salamis. Cimon, however, d. before the walls of Citium (449); the expedition, leaderless, returned to Athens and no further attack was made. Patriotic Boeotians (see BOEOTIA) now revolted against their democratic govt., which they regarded as the mere tools of Athens. The Athenians sent Tolmides, with a thousand hoplites, to support the Boeotian democrats, but he was surprised and defeated at the battle of Oronoea. Next the cities of Euboea (q.v.) revolted, desiring to free themselves from their tribute under the Delian confederacy. Nor was this the end of the misfortunes of Athens. The 5 years' truce with Sparta was expiring, and ominous preparations were being made in Peloponnesus. In 446 the young king Pleistoanax and his guardian, Cleandridas, led a great force from Peloponnesus to attack Attica, but, probably through the characteristic venality of the Spartan generals, the expedition came to naught and returned to Sparta. Pericles, with 50 ships, then hastened across to Euboea, which he reconquered. This however, was the only one of her numerous losses which Athens was destined to recover. Pericles himself shrank from the idea of continuing the contest, and negotiations with Sparta resulted in the Thirty Years' peace (445) and in the same year the end of the war with Persia.

The Thirty Years' peace, although it was not destined to endure for half its appointed time, gave Greece some 14 years of comparative quiet. At Athens these years coincide with the zenith of the power and influence of Pericles, who was practically the first minister of the rep. for the whole period. During this period immediately before the Peloponnesian war, Athens reached the height of her literary and artistic glory. In these years were built the Propylaea or entrance halls of the Acropolis and the Parthenon (see ATHENS). In the galaxy of great names the dramatists Sophocles, Euripides, Cratinus, and Aristophanes (qq.v.), and the artists Phidias and Ictinus (qq.v.), shine supreme. The beautiful city was a veritable haunt of the Muses.

Samos revolted in 440 over a boundary dispute with Miletus, but was subjugated in the following year and compelled, in accordance with the precedents of Naxos and Thasos, to raze her walls and give up her warships. As late as the year of this revolt, the majority of the allies of Sparta was still in favour of preserving peace with Athens, but shortly afterwards opinion began to change.

The causes which led up to this change of feeling are various, but in the depth of his heart every Spartan felt a grudge against Athens for having built up an empire which was sufficient to overshadow the ill-defined hegemony which his own city possessed in Peloponnesus. Urged on by the Corinthians, who were envious of the commercial prosperity of Athens, and were indeed virtually at war with her, the Spartans now decided on war (432). The Peloponnesian alliance (Sparta and her allies) then sent a peremptory note to Athens demanding that Athens should 'restore their autonomy to the states of Greece.' Pericles, whose power at this time had suffered a temporary eclipse, reasserted his mastery over the Ecclesia (assembly of the citizens), and Athens rejected the ultimatum. A few days later the actual outbreak of hostilities occurred (Mar. 431).

The Peloponnesian war was not merely a decisive duel between 2 rival cities; it became a racial conflict between Ionians and Dorians, and a political conflict between democratic and oligarchic principles. It drained Greece of her resources and left her weak and spiritless, an easy prey to the uncorrupted vigour of the barbarians. The war raged from 431 to 404 and ended with the destruction of Athenian power. The chief causes which brought about the final disaster were the unscrupulousness and temerity of the popular leaders, among whom Alcibiades (q.v.) was chief offender; the quixotic scheme of the Sicilian Empire (see SICILY) which resulted in the destruction of the Athenian armament; and the exhausting intestine strife which reached a climax in the outrages of the Four Hundred. The final victory of Sparta was due to an ignominious and traitorous alliance with the Persian Cyrus. The destruction of the Long Walls of Athens and the surrender of her fleet (404), which only 2 years before had signally defeated CalliCratidas at the battle of Arginusae (no fewer than 70 Peloponnesian ships being destroyed for the loss of 15 Athenian vessels), mark the final throes of her tragic fall. Next year, at the battle of Aegospotami (405), 170 Athenian vessels fell into Lysander's (q.v.) hands, with 4000 prisoners, including 3 of the 4 enemy admirals.

It was as champion of Gk freedom against the despotic presumptions of the 'tyrant' city that Sparta had won the confidence of her allies; but when, at the close of the war, she devoted her victory to private aggrandisement, the forces of disintegration began to act. A combination was formed during the succeeding decade to lay low the power of Sparta; but the efforts of the hostile coalition were abortive, in spite of assistance from the Persians, who overthrew Spartan naval supremacy at Cnidus (394). Sparta, however, once more enlisted Persia among her supporters, and by the peace of Antalcidas became the supreme land power in Greece. But the price of the peace was the surrender of the cities on the

Asiatic coast, nor was the hegemony of Sparta destined to survive. Thebes, under her dauntless leader Epaminondas (q.v.) suddenly confronted and irrevocably destroyed the Spartan supremacy at Leuctra (371). The subversion of Sparta's ascendancy was a fatal blow to the oligarchic govs. of Greece, and democracies were re-established in many states. By the restoration of the Messenians Epaminondas further incapacitated Sparta. The domination of Thebes was for the moment indisputable and invincible. But the death of Epaminondas on the field of Mantinea (362) left Thebes without a leader and opened the gates for the Macedonian invaders. Philip, king of Macedon (q.v.), a barbarian, fired with the ideals of Hellenism and a staunch believer in militarism, having organised an army on a new basis of the phalanx, awaited an opportunity to interfere in the domestic variances of the rival Gk powers. He devastated Thessaly, sacked Olynthus, and overran Phocis. Bribing here, subduing there, he gradually won over the Gk states, and even the eloquence of Demosthenes (q.v.) could not arrest the victor's progress. In 338 the victory of Chaeronea made Philip indisputable master of Greece. It is strangely ironical that the unity of Greece, which Athens, Sparta, and Thebes had spilled their life-blood to create, was only realised by the sword of a semi-barbarian king, and at a time when the glory of the country's prime had irredeemably departed.

Greece was exhausted as a field of military enterprise, and Alexander (q.v.), son and successor of Philip, resolved to devote his indefatigable energies to the conquest of the E. Having made an example of defiant Thebes, the Macedonian turned his back upon Greece and overran the Persian Empire. He then penetrated into India, spreading effectually the language and civilisation of the Greeks over the conquered lands. His schemes were gigantic. He intended to follow the subjugation of the E. with the conquest of Italy and Carthage, but death interrupted his victorious course. He d. at Babylon in 323, aged 32. No successor was found competent to shoulder the responsibilities of his vast empire, which almost immediately began to disintegrate. The Gk states, now aware of Macedonia's weakness, made sev. attempts to reassert their independence. The revolt was headed by the Athenians and the Aetolians, but in 322 the insurgents sustained a decisive defeat at Crannon. Antipater (q.v.), the Macedonian leader, changed the constitution of Athens to an oligarchy, and disfranchised and deported the poorer classes (see also ANTIGONUS; ANTIOCHUS; DEMETRIUS; PTOLEMY; SELEUCUS).

Macedonia recovered her prestige under Antigonos Gonatas, who in the Chremonidean war (286-282) once more subdued Greece in spite of the formidable opposition of Athens and Sparta. The Achaean League, renewed in 281, became gradually enlarged and consolidated. Its main object

being the restoration of Gk independence. Under Aratus (q.v.), the celebrated Sicyonian diplomatist and irresolute general, Sicyon and Corinth were persuaded to join the league, which soon became the chief political power in Greece. But the league, now extending its power over Peloponnesus, came into collision with Sparta. A succession of victories by Cleomenes (q.v.) of Sparta prompted Aratus to invite Macedonian assistance, and thus the primary object of the combination, which aimed at replacing Macedonian ascendancy in the Peloponnesus by free democracy, was defeated. During the Social war the Achaean League was assisted by Philip V of Macedon against the Aetolian League; but now Greece had come within the orbit of Rom. expansion and the wider interests of both parties which were at stake in the second Punic war called for a cessation of hostilities. Philip himself made a treaty with Hannibal (215). Rome in revenge sowed seeds of dissension among Philip's Gk dependencies, and when the victory of Zama in 202 brought the second Punic war to a satisfactory close, she turned her attention to the Gk delinquents. Philip's forces were crushed by Flaminius at Cynoscephalae in 197. Peace was made on generous terms, and the freedom of the Gk cities was proclaimed at the Isthmian games (194). At the battle of Pydna (168) Aemilius Paulus defeated Perseus, the king of Macedon, and brought the Macedonian kingdom to an end.

In 147 the Achaean League made an abortive attempt to throw off the Rom. yoke; but Metellus defeated them at Scarpheia, and Mummius (q.v.), his successor, made a terrible example of Corinth, dismantling her glorious edifices and transporting her priceless treasures. The Rom. administration in Greece was, on the whole, tolerant and beneficial. Gk ascendancy in thought and letters caused Rome to treat her dependency with exceptional leniency. Peace was, however, broken in 88 bc. Mithridates (q.v.), king of Pontus, incited Athens, Achaia, Boeotia, and Laconia to support him against Rome. Archelaus, Mithridates' general, was defeated by Sulla with heavy loss at Chaeronea and Orchomenos (86), and the Gk cities which conspired against Rome were treated with extreme severity. During the civil war between Caesar and Pompey the Athenians sided with Pompey, but when Pompey was finally vanquished, Caesar treated his opponents with his characteristic clemency and generosity. Their gratitude was short-lived, for Athens embraced the cause of Brutus and Cassius, seeing in Caesar's murderers champions of freedom comparable to her own heroes, Harmodius and Aristogeiton. During the struggle between Octavian and Antony, the Athenians offered their support to Antony, and consequently the victorious Octavian ruled them with a firm hand. Not till the time of Vespasian, however, did the internal administration of Athens suffer fundamentally through Rom.

interference. That emperor deprived the Athenians of their gilded show of liberty and brought them under the iron rigidity of Rom. institutions and law. Hadrian (q.v.), however, entertained a warm admiration and affection for the city, and made a generous attempt to restore the splendour to the citadel of the muses and to revive its literary and artistic genius. For later hist., see also GREECE, History.

Archaeology.—The Greeks of the classical age were not conscious of any debt to former periods, and they were but little interested in the past. Thucydides added to his hist. of the Peloponnesian war a chapter on archaeology; and Pausanias in the 2nd cent. AD was the author of the *Periegesis of Greece*, a work of lasting value for its references to Gk sculpture and the archaic period. In the 18th cent. Eng. travellers brought back works of art belonging to the Hellenistic age. The Society of Dilettanti commissioned architects to make drawings of buildings in Athens and Asia Minor; and in 1801 Lord Elgin began his collection. It was not, however, until the liberation of Greece from the Ottoman yoke (1821-9) that anything like systematic excavation became possible. In 1830 the Gk authorities began the task of clearing the Athenian Acropolis; and this work has gone on until in our own day we have a clear picture of this most famous site not only as it was in the age of Pericles, but also its complete hist. from the most remote period of its settlement.

Apart from the supremely important architectural evidence thus brought to light, perhaps the 2 most noteworthy discoveries have been a collection of statues which were damaged and overthrown by the Persians when in 480 bc they sacked the city immediately before their defeat at Salamis. These sculptures bore plentiful and bright traces of their original paint. Other finds have enabled students to draw up a complete record of Gk vase painting. Gk archaeologists have also made important finds at Epidaurus, where they excavated the theatre and the sanctuary of Asclepius. The latter affords a complete picture of a spa at the end of the 2nd cent. AD. Valuable architectural and epigraphic evidence was brought to light at Thermon, whilst at Lycosura there has been unearthed a colossal group by Darphon (2nd cent. bc). But the most spectacular result of Gk archaeological work in recent years is the re-discovery in 1957 of Pella, the anc. Macedonian cap., where excavations are now in progress.

Successive Gk administrations have welcomed the estab. of other national schools of archaeology in Athens. The Germans cleared the celebrated theatre of Dionysus and part of the Dipylon cemetery; they also made excavations at Olympia, revealing the temples and other buildings of the Panhellenic sanctuary, and in doing so unearthed, among other relics, 3 priceless treasures: the pedimental sculptures of the temple of Zeus, the 'Winged Victory' by Paenion, and,

above all, the glorious Hermes by Praxiteles, the only undoubted original from the hand of that master. Vases from the temple of Hera in Samos throw much light on the hist. of Ionic art; and important architectural finds were made in the is. of Aegina among the ruins of the temples of Aphrodite and Aphaea.

Of the more important work of the Fr. school mention must be made of that at Delphi, Delos, and Tegea. At Delphi a wealth of architectural remains and inscriptions was found, together with the marble frieze of the Cnidian treasury and the world-famous 'Bronze Charioteer.' Delos yielded the sanctuary of Apollo and the Hellenistic tm, whilst at Tegea were discovered sculptural fragments by Scopas (4th cent. BC). The Americans have concentrated their attention principally on sites at Corinth and Argos, but their main achievement has been the complete excavation of the Agora at Athens and the restoration of the Stoa of Attalos.

In Greece proper the most important work by the Brit. school has been done at Sparta. It has illuminated the whole hist. and culture of that renowned city. Brit. endeavour will, nevertheless, always be associated mainly with the revelation of Aegean culture in Crete (q.v. See also *AEGEAN CIVILISATION*).

In 1873 Heinrich Schliemann unearthed some epoch-making remains at Hissarlik in Asia Minor, which led to the identification of the Homeric Ilion (Troy). Subsequently at Mycenae, Orchomenos, and Tiryns he brought to light traces of a high civilisation some 1500 years older than anything hitherto known. After his death his work was continued by Dörpfeld.

Archaeology, one of the most exacting and exact of sciences, has been hampered in the 20th cent. by 2 world wars. In the first Greece was not the victim of modern progress. In the second there was bitter fighting both on the mainland and in Crete, and it was not to be hoped that the monuments of antiquity would survive unscathed. Generally speaking, however, those of the classical period escaped serious damage. The inevitable destruction was suffered principally by relics of the Byzantine and medieval periods. The Axis occupation of Greece lasted from April 1941 to Oct. 1944; and during that time the work of the Ger. Referat für Kunstschutz not only ensured the preservation of many irreplaceable treasures, but also led to some further excavations. The most interesting discovery at this time was an archaic marble sphinx now in the Kerameikos Museum at

ATHENS; P'ARTHENON; CERAMICUS; and articles on the prin. Gk cities, artists, etc.

Greek Law.—The first written laws in Greece did not appear until the development of the Gk city states; previously the only existing laws had been a floating body of unwritten 'customary' laws. But by the beginning of the 8th cent. BC every first-class Gk state, except Sparta, had advanced beyond the stage of unwritten usage.

Owing to the peculiar geographical conformation of the country, Gk law tended to develop along separate lines in the various states. Consequently there was at no time a common law for Greece comparable to the common law of England. Although there were many principles common to all the various codes, such as the marriage law and some provisions in the criminal law, their presence is to be attributed to the common stock of anct Gk ideas from which all Gk laws are derived. The Athenian judicial system, as developed under the democracy of the 5th and 4th cents. BC, stands inevitably in the forefront of Gk law, both because of its high degree of development and the influence it exerted over the whole of the Gk world through the cultural and political supremacy of Athens. It was Dracon (c. 620 BC) who first codified the mass of unwritten laws into what was intended to be a permanent body of law; but the real basis of Athenian law was laid by Solon, during his archonship in 594 BC. The code of Solon may be said also to have laid the foundations of Athenian democracy by the formulation of the *isonomia*—equal membership of Assembly and supreme Law Court for all free-born adult males b. in Attica. The Peisistratid tyrants preserved the code almost intact, but after their final expulsion Cleisthenes revised it once more, giving it a still further bias towards democracy.

Two main principles govern the complicated structure of Athenian law, both constitutional and civil: first, that all law should be easily intelligible to the ordinary man, and, secondly, that the best guarantee of a pure administration of justice is the common sense and moral instinct of large bodies of ordinary men. For this reason the *dikastai* or jurymen occupy the most prominent place in the Athenian judicial system. Drawn from the ordinary citizens over 30 years of age not under any civil disqualification, these courts of *dikasts*, sometimes reaching 6000 in number, formed both judge and jury; they controlled the appointment and conduct of executions and eventually encroached even upon the sovereign Assembly. Athenian lawsuits fall generally under the headings of *graphai* (public suits) and *dikai* (private suits). These were always initiated by a private individual, the *dikasterion's* function being the purely passive act of judging; it was possible, however, to counter-accuse the accuser who brought an illegal action and to penalise him heavily. The Athenian

When, however, we consider the turbulent hist. of Greece the wonder is, not so much that we have only fragmentary remains of a splendid past, but that the irresistible forces of nature and the ungoverned fury of man have spared anything for the instruction and enjoyment of the present age. See ACROPOLIS; ARCHAEOLOGY;

usually conducted his defence in person; many, however, enlisted the services of a Demosthenes or an Isocrates to compose their speeches for them, and many such speeches are still extant. Athenian justice, like other Athenian institutions, soon became decadent; appeals to the emotions of the jury had always been a weakness of the system, and corruption and the practice of paying the jury for their services further degraded the Athenian law courts. With the Rom. conquest the Rom. system of law gradually took the place of the Gk system, which can now only be disinterred with difficulty from extant speeches and inscriptions.

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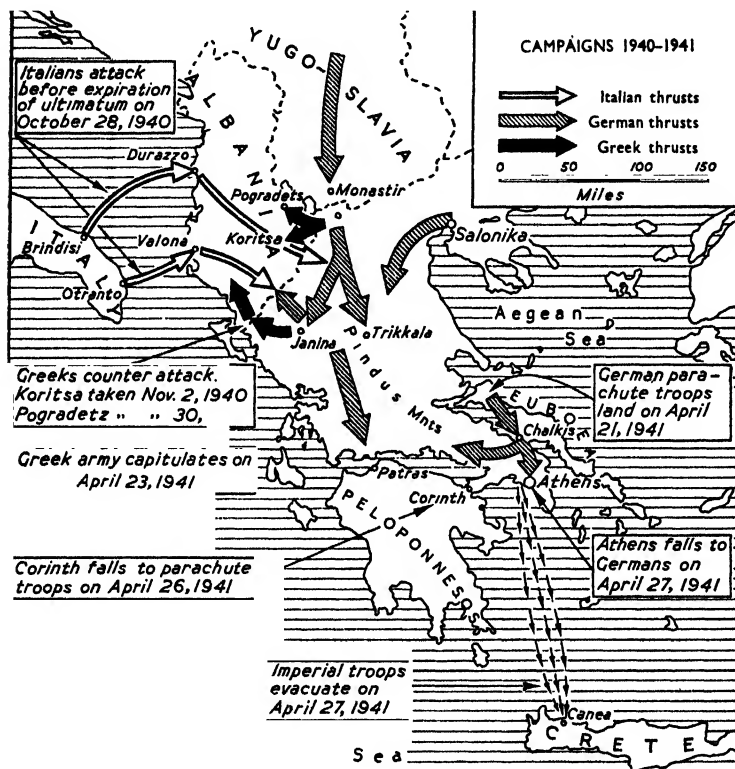
Greece, Second World War Campaign in (1941) (including Ger. invasion of Yugoslavia). *The Italian Invasion of Greece.*—Mussolini's invasion of Greece was undertaken in the hope of challenging Brit. sea-power in the Mediterranean, and the difficulties which met it from the very outset were due largely to that power. Time was pressing, for Graziani's Libyan army was making no real headway in its attack on Egypt. The duke of Aosta, commanding the It. forces in East Africa, had seized Kassala with the possible end in view of an advance on Khartoum in co-operation with an attack on the Suez Canal by the Libyan army. But Graziani's ponderous advance was always checked by the threat to his left flank from the sea, and without Aegean bases those in the Dodecanese Is. were useless as a *point d'appui* for an attack on the Brit. fleet at Alexandria. (See **AFRICA, NORTH, SECOND WORLD WAR**.) In attacking Greece Mussolini underrated both Brit. sea-power and Gk heroism. On 28 Oct. 1940 the It. Gov. sent an ultimatum to Greece accusing her of tolerating the use of her territorial waters and ports by the Brit. Navy and of permitting the organisation of the Brit. secret service in Gk Is., and they therefore demanded the use of strategic points on Gk ter. (Corfu, Crete, Epirus, and the port of Piræus) for use against Britain. Before the ultimatum was due to expire It. forces from Albania

attacked Gk ter., meeting at once with strong resistance at all points.

The main strategy of the Italians in their thrust through the Pindus towards the Kalamos R., was to take Janina and Metsovo so as to open the way to Thessaly. But Gk skill and valour, aided by familiarity with the difficult wooded and mountainous terrain, and by Brit. air and naval co-operation, thwarted the It. advance before it was more than a few m. over the frontier. The Italians had sought to deliver a swift and decisive blow against the Gk forces under Papagos (q.v.) by pinning them down with artillery fire and tanks and, at the same time, using the Alpini to cut communications between the Greeks in the Pindus and Epirus sectors by rapid lunges towards Metsovo on the Epirus-Thessaly road. Early in these encounters light Gk units withdrew after retarding the It. advance; but other Gk detachments arrived on the scene by forced marches and launched a strong counter-attack. The Greeks not only broke the thrust through the Pindus so decisively that the Italians, fearing encirclement, fled in disorder, but began themselves to advance and, by 28 Nov., they had captured Ersek and thereby cut the main lateral communication. Following this debacle, Marshal Badoglio, It. commander-in-chief, appointed Gen. Soddù to the command of operations in Albania. Throughout this period Brit. planes had helped by bombing It. positions, aerodromes, troop concentrations, and other targets. It. planes made raids on Patras, Larissa, Salonika, Corfu, Corinth, and other cities, but threats to Athens were lessened by Brit. raids on Stampalia Is., the nearest It. air base to the Gk cap. In the Epirus region the Italians were forced to evacuate the positions at Kalpaki which they had won at great cost. Meanwhile in the Florina region the Greeks, who had crossed the Albanian frontier early in the campaign, were now steadily concentrating on the important position of Koritsa, one of the 2 It. advance bases. They captured it on 21 Nov. A few days later the victorious Greeks were in Muskopolje and were advancing on Pogradets, which fell on 30 Nov. These operations consisted essentially in innumerable small advances, after desperate resistance and prolonged pauses, followed by the fall of some tn or vil., in a maze of broken, wooded, and ravined country, which gave its name to the issue of the protracted battle. Permeti, a tn 15 m. N.E. of Argyrokastrò, fell to them on 5 Dec.; but Klisura, an equally important position in relation to Argyrokastrò, held up the Gk advance for a month. Argyrokastrò was abandoned by the Italians on the fall of Permeti, but the Greeks could only enter it after the capture of the Albanian port of Santa Quaranta, at the W. end of the lateral road. Argyrokastrò was at the S. end of the 2 It. advance bases and, with its capture, the entire Gk front was now out of Greece and in Albania. The Greeks were aided by the prompt and close

co-operation of the R.A.F. and R.N. Tons of shells poured by Brit. ships into Valona proved that Brit. sea-power was a factor in the defence of Greece. One of the first results indeed of the It. attack on Greece was the extension of Brit. sea-power westward, for, while Greece remained neutral, Britain was denied bases in that country.

a successful reaction to the unbroken triumphs of the Greeks. In desperation Mussolini ordered mass assaults on the Gk positions (Mar. 1941). But the Greeks held at every point. Successive lines of It. infantry were mown down by machine-gun and artillery fire. The main It. drive was on a 25-m. front E. and S. of Tepelene



Crete was also occupied as a naval base, thus giving the R.N. a strong grip on the middle Mediterranean. After the fall of Kilsura and the small Albanian port of Chimara, 22 m. from Argyrokastrò, the next Gk objective was Tepelene. It is now, however, It. reinforcements were reaching Cavallero, who had replaced Soddu in Albania and was now delivering a series of counter-attacks along the whole front.

It was vital to Mussolini that the It. forces should stop the Greeks from further advances in the important Tepelene region. Moreover It. prestige demanded

and was said to have been directed by Mussolini in person. Wave on wave of It. regulars and black-shirts were broken up and 3 It. divs. were annihilated.

German Invasion of Yugoslavia and Greece.—British Expedition to Greece.—But this repulse of the Italians marked the zenith of Gk resistance to invasion. Preparations for a Ger. attack through Bulgaria and Yugoslavia were now nearly complete. Bulgaria's adherence to the Axis having been ratified by the Sobranje, the way was open to Germany to bring pressure to bear on the Yugoslavs. During this period Eden, Brit. foreign

minister, and Gen. Dill, chief of the Imperial General Staff, were in Athens endeavouring to organise a Balkan bloc against Ger. aggression. It was hoped that, if Yugoslavia could be induced to resist a Ger. onslaught, Turkey might co-operate with Greece and that, with the help of a Brit. expeditionary force drawn from Gen. Wavell's victorious army of the Nile, all these forces might suffice to throw back the Ger. invader. But Ger. military plans were on a much wider scale than was suspected by the Brit. Gov., for, even before the Ger. Gov. made their final demands on Yugoslavia, and while Brit. forces were being transported to Greece, Ger. troops and tanks were being borne across the Mediterranean from Sicily to Tunis and thence, creeping along the coast, were disembarked at Tripoli. Troop-carrying planes were also supplementing the formidable force which, late in Mar., suddenly made its appearance S. of Benghazi (then in Brit. possession) with a view to the invasion of Egypt. (For antecedent events in Libya see AFRICA, NORTH, SECOND WORLD WAR.) On 25 Mar. the Yugoslav Gov., under the regent Prince Paul, concluded a pact with the Axis powers, but, immediately afterwards, a popular *coup d'état* was organised by Gen. Simović, and Peter II assumed the reins of gov. But the immediate consequences for the people were likely to be grave, for they were in no position to resist the onslaught of immense Ger. mechanised forces or to defend their cities against air attacks. Brit., Australian, and New Zealand forces to the number of about 60,000 had, however, been landed in Greece in mid Mar. and had taken up strong positions in Macedonia, while heavy Ger. forces were massing in Bulgaria. Two Australian infantry brigades were holding the central position N. of the Vistritza R., the New Zealand troops were extended towards the coast on their right, while the Greeks held the line in the mountains on their left. The Germans struck on 6 April.

Their armies crossed the Bulgarian-Macedonian frontier at sev. points. They began to move up the Struma R. towards Salonika, across the Despoto Dag in the direction of Drama, across the Rhodope Mts on Xante, and down the Maritza R. The allies were under the command of Gen. Wilson. His plan was to delay the enemy and to make his advance in Thrace and E. Macedonia as costly as possible. On 8 April the Germans captured Salonika, Skopje (Uskub), and Veles, and so directly menaced the Monastir Gap. In view of this threat a mixed allied force composed of artillery, an anti-tank gun unit, and a machine-gun battalion was posted to the S. of Florina. This force was attacked on 9 April. The Germans sent forward the Adolf Hitler Div., and, outnumbered by 20 to one, a Brit. armoured brigade sustained the brunt of this first tank and artillery attack. It was obvious that the enemy's immense superiority and weight of armour would soon overwhelm them

and threaten the flank of Wilson's whole army. The allied force therefore withdrew to a mt pass a little to the S. of their original position. The aim of the Germans was to reach Mt Olympus, and they sent up 2 more divs. to support the crack troops already engaged and the 3 divs. resumed the onslaught on the Brit. line. In this battle the Ger. losses were enormous; but after another 4 hrs of furious fighting they carried the Kozani Pass. By now the Germans had 6 divs. deployed N. of Larissa; Yugoslav resistance had collapsed, and they had entered the Monastir Gap and threatened to outflank the Gk Army in Albania, that in Epirus being already in retreat. Further, the new Anzac line on Mt Olympus was in danger. Accordingly, a general withdrawal began from Olympus to the Hallakmon R. and beyond in a NW. direction.

During the early stages of the Brit. withdrawal the Germans were using 2 armoured divs. in addition to motorised infantry against the Allies, whose only armoured force was 1 Brit. brigade. They had already carried out a series of air-raids on Gk ports, especially the Piræus. The air attack grew daily more intense until a march of even a few m. on the road between Athens and the front line became a perilous adventure. There were too few Brit. aircraft to carry out regular defensive patrols over the Allies' area, though during the campaign what aircraft were available had delivered many attacks on Ger. lines of communication. Elason, the vil. H.Q. of the Anzacs, was destroyed by bombs; Larissa, through which the road traffic passed to the front, was wrecked. A further withdrawal began on 16 April in face of the still increasing Ger. weight of numbers. This was the beginning of a movement which halted when the Anzacs occupied a 30-m.-long line through Thermopylae in the rugged mountainous dist. at the foot of Mt Parnassus. There was now the added danger of a Ger. attack from the W. and from the Is. of Euboea to the S., so that it was necessary to place a small mobile force on the Is. to prevent the landing of Ger. airborne troops. Australian observers looking down from the Bralos Pass on the plain of Thermopylae saw disheartening evidence of the Ger. superiority in equipment. Field guns were being landed from big Junkers planes, while other planes were fetching load after load of fresh troops. On the night of 23 April no fewer than 450 troop-carrying vehicles were seen moving towards the Anzac line obviously with a view to attacking it on the W. flank. Ger. troops had also landed on the N. coast of Euboea, thus presenting a threat from a different point. In these circumstances the Brit. force began yet a further withdrawal and by the end of the month some 43,000 troops had been evacuated from the Gk mainland.

In this way ended the Brit. attempt to set up a kind of Torres Vedras resting on Mt Olympus, and the reason why it failed

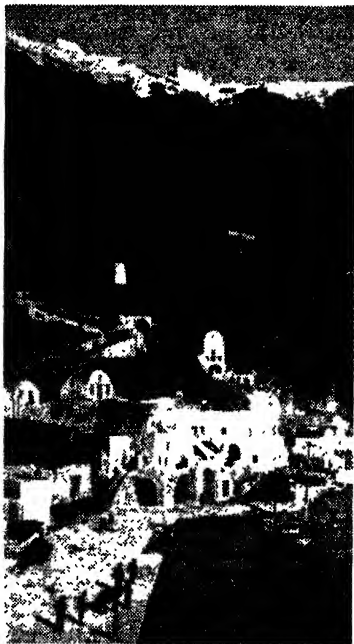
was that this was impossible of achievement without local air superiority. It was not the collapse of Yugoslav resistance or the Ger. numerical preponderance in tanks and infantry which caused the failure of the Allies' military plan, though these were all contributory factors. The campaign was in fact won by the Ger. Air Force. The Germans at the decisive moment were able to put into the air at the strategic points a body of planes so large as to seem ubiquitous. Blasting strong points and gun positions in the mts, bombing tanks and transport along the narrow valleys, ceaselessly attacking communications, bases, dumps, aero-dromes, ports, and shipping, they gave the Brit. and Gk forces no respite. Could the Brit. forces have been aided by even 100 extra Hurricanes and Spitfires the story might have been different; but by reopening the Libyan front and threatening Egypt just when they did, the Germans were able to reduce the Brit. margin of fighter-plane strength in the Balkans to a figure at which it ceased to affect the issue of the battle. Moreover, owing to the poor aerodrome facilities in Greece, no large R.A.F. force could have been sent.

In the final phases of their resistance to the combined invasion of their country by Germans and Italians the Greeks exhibited all their traditional courage against tremendous odds. Their valiant army in the Epirus was paralysed by the lack of anything but improvised transport; for when the Germans had taken Monastir and captured the vital pass to the S. of the Epirus army, they had in effect cut that army in two. When it became obvious that the resistance of the Gk Army was at an end the Gk Gov. requested that the Brit. contingent should be withdrawn from Greece. The enemy having by repeated air attacks rendered impracticable the one available good port, the Piræus, re-embarkation had to take place, as at Dunkirk, from open beaches against continual enemy pressure on land and heavy and successive attacks from the air. Nearly 80 per cent of the Eng. and Anzac troops sent to Greece were safely evacuated to Egypt. The lighter fighting equipment was also taken away, but the heavy equipment and transport were lost. Australian casualties on land throughout the campaign were between 3000 and 4000. Brit. casualties numbered about 6000. The enemy's losses are not accurately known, but they could hardly have been less than 50,000. The evacuation, which was carried out under the generalship of Gen. Sir Thomas Blamey, then deputy commander-in-chief, Middle East, was an unquestionably magnificent achievement.

In this way ended the Brit. adventure in the Balkans and the Gk defence. One lesson it taught was, in the words of Blamey, that 'men who were not fully mechanised could not hope to fight fully equipped mechanised troops, against whom a rifle was as useful as a bow and arrow.' See also CRETE, BATTLE OF

(1941). For details of military operations in Greece in 1944 see EASTERN FRONT IN SECOND WORLD WAR. See C. Buckley, *Greece and Crete, 1941, 1952.*

Greek Archipelago, collective name given to some hundreds of is. and islets in the Aegean Sea belonging to Greece, including Crete (area 3200 sq. m., pop. 462,000), Euboea (area 1380 sq. m., pop.



E.N.A.

GREEK ARCHIPELAGO: THE ISLAND OF SANTORIN (THERA)

The port of Thera, showing also the upper town

about 150,000), the Cyclades (area 1050 sq. m., pop. 126,000), and the Northern Sporades (area 200 sq. m., pop. about 13,000). The most important of the Cyclades are Naxos, Syros, Andros, Melos, Paros, Thera, and Myconos. The chief of the Northern Sporades are Scyros, Scopelos and Sciathos. Many of the is. are volcanic in origin. There are numerous islets which are uninhabited or visited only temporarily by herdsmen. See separate articles.

Greek Architecture, see ARCHITECTURE, 2. (Greece).

Greek Art is conveniently considered under 3 heads: architecture, sculpture,

and painting. The architectural and sculptural remains are considerable and representative, but extant examples of painting are scant, and, for the most part, belong to the periods of immaturity and decline. Specimens of Gk vase painting are plentiful, but they possess the disadvantage of giving us no adequate idea of development in the use of colour. Excavations in Knossos and Mycenae (see CRETE; AEGEAN CIVILISATION) have revealed examples of Gk vase painting which belong to the millennium 2000-1000 BC. The vases are exceedingly beautiful in shape, and the painting is of a very vigorous and free type. There are some examples of geometrical and conventional designs, but the finest specimens exhibit free drawings of plants, animals, and human figures, which can bear comparison with the most beautiful products of the Hellenistic age. The Dorian conquests checked the development of Mycenaean or prehistoric Gk art, and the art of vase painting was arrested with the sister arts. The earliest specimens of Attic art are of the geometric type; the figures are rigid and the balance is laboured. Prior to the 6th cent. BC light red clay was used and the figures were painted in rich black glaze. Lines of physiological and ornamental detail were incised on the black with a fine point. Other colours were frequently superimposed after the firing of the black—notably white and purple. But the effect of these black silhouettes on the light background was always grotesque and in the 6th cent. BC a complete reversal of this arrangement was effected. The figures were left in the light ground-colour, and the background was superimposed in black glaze. Details in the figures were then drawn in fine lines of glaze. The red-figure vases comprise the most beautiful specimens of Attic vase painting. In the period of the decline white washes were frequent in the red-figure vases and simplicity of design was abandoned for elaborate detail. The Greeks painted their statuary, though surviving examples are extremely rare. In the Acropolis Museum at Athens there was a figure called the 'Hydrophoros' which bore traces of its original paint. This rare treasure was irreparably damaged by Brit. soldiers in 1944. Our knowledge of Gk mural and easel painting is mainly derived from critical comments scattered through classical authors. There are indeed extant specimens of Gk prehistoric wall painting found at Mycenae and Knossos, and, like the vase painting of the same period, they show a remarkable beauty of conception and freedom in execution. Polygnotus was the first great Athenian mural painter. He fl. during the inspiring epochs of the Persian wars. He is especially commended for his treatment of human expression and his skill in representing drapery. At the close of the 5th cent. mural painting was succeeded by easel painting. Perspective was studied more carefully by the younger school, and the effect aimed at was emotional and sentimental. Zeuxis (q.v.)

is traditionally the representative painter of the period. He was held to be most successful in his delineation of the female figure, especially in the nude. The 'Helen' of Zeuxis in the temple of Hera at Croton was his most perfect achievement. The Attic school was characterised by its free naturalness, and the representative names are Euphranor and Nicias. Apelles, (q.v.), the most famous of all the ancient painters, belonged to the Ionic school and fl. about 350 BC. His works were chiefly portrait painting—a new departure in Gk art, which fl. under Macedonian court patronage. The ideal element entered into his portraiture, through the addition to his subject of mythological or symbolical motifs. Thus he painted equestrian portraits of Alexander the Great in company with the Dioscuri and leading War in chains behind him. His most famous picture was, however, a mythological subject entitled 'Aphrodite Anadyomene.' It represented the goddess in the nude, rising from the sea and wringing the water from her hair. The descriptions of this picture give us some conception of that peculiar 'charm' by which the ancients characterised the works of Apelles. For Hellenistic painting our chief source of information is the wall painting of Pompeii and Herculaneum—Rom. copies of Gk originals. Elaborate composition, and dramatic action, suggest that the Gk painter of the 3rd cent. BC was already tackling successfully problems of painting that the It. Renaissance was later to solve in its own triumphant fashion.

For Gk architecture see ARCHITECTURE, 2. Greece.

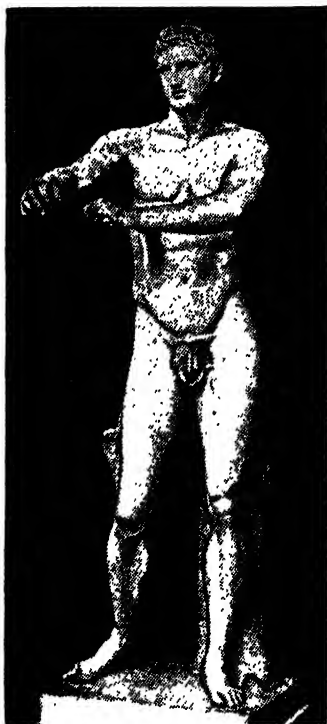
Gk sculpture was closely associated with temple architecture. The temples enshrined the statues of their respective gods and the metopes were adorned with the choicest achievements of glyptic art. Faithfulness to nature, combined with the worshipful and dedicatory spirit of idealism, are the essential qualities of Gk statuary. The ideal and the inspiration came from the gods, whose perfections the Gk sculptors sought to portray, but the type and model were derived from the palaestra, the gymnasium, where Gk athleticism had moulded the human physique to superb proportions. Thus was the ideal realised and at the same time the real idealised.

Just as the temple column was evolved from the rude tree-trunk that supported the primitive dwelling, so the perfect statue was evolved from a rough-shapen trunk, which represented some deity. Sev. examples of this block type of wooden image existed in classical times. A rough wooden block in the Parthenon was revered as being the most ancient statue of the goddess Athena. Herodotus refers to similar representations of the Dioscuri, and the Hermes busts which stood in classical times at the cross-roads mark the transition stage from limless block to perfect statue. In the early stages of the art the pose is simple and the arrangement of the members is absolutely symmetrical,

the legs being stiff and close together and the arms hanging straight and rigid. The drapery of these early types falls in stiff perpendicular folds, showing no indication of the form beneath. Muscles and other physiological details are but imperfectly rendered. One of the finest productions of this early period is the famous 'Charioteer' from Delphi (c. 480 BC). The stiffness of the drapery and the simplicity of the pose are indications of the archaic conventions, but the suggestive poise of the head and the slight backward bend of the body give to the attitude a forcible truth which harbingers greater developments. The works of Pythagoras and Myron (fl. 431 BC) (q.v.) bring us to the very threshold of sculptural maturity. These sculptors were most successful in representing athletic types. The celebrated 'Discobolus' of Myron is a most complex pose, but there are indications of archaism in the lack of suppleness and flexibility.

Pheidias (q.v.), the greatest sculptor of ancient Greece, was b. about 450 BC. He thus fl. in the period when Greece, flushed with her victories over the Persians, realised for the first time her infinite potentialities. It was an age of great inspiration, an age which produced Pericles, Pindar, Aeschylus, Sophocles, Euripides, and a galaxy of lesser stars. The colossal works of Pheidias were the gold-and-ivory statue of Athena Parthenos, the bronze statue of Athena Promachos, and the gold-and-ivory statue of Zeus at Olympia. Unfortunately these statues have all perished. The 'Athena Parthenos' represented the goddess wearing the 'aegis,' and bearing in her right hand a statuette of victory. In the great bronze statue on the Acropolis the goddess was represented in full armour; the figure dominated the city and was a landmark to ships at sea. Pheidias drew his inspiration for his colossal Zeus from Homer's description of the thunderer (*Iliad* i. 527). The power of this statue has this ancient tribute, 'Let the man who is sick and weary of soul, who has suffered much sorrow and tribulation, and whose pillow is visited not by kindly sleep, but stand before the image, and he will, I deem, forget all the terrors and troubles of human life.' Examples of sculpture of the classical period are comparatively rare. They are known to us through Graeco-Roman and Roman copies. From the sculptures of the Parthenon, however, we derive our first-hand knowledge of the works of Pheidias and his school. The E. and W. pediments contained the finest sculptures. The 'Theseus' (of the E. pediment) is a nude figure in repose, yet the very calmness is suggestive of power and potentiality. The so-called 'Three Fates' (also of the E. pediment) is a harmoniously balanced group of singular beauty; the draperies fall in soft and clinging folds exquisitely revealing the physiological details of the figures. The Elgin marbles (q.v.) (Brit. Museum) are from the frieze, and represent the procession of the Panathenaea. Polycleitus of Argos (c. 452-412 BC) as an

artist approached most nearly to an equality with Pheidias. The characteristic feature of the works of Pheidias was sublimity; nobility is the distinguishing quality of the works of Polycleitus. The massive and splendid figure of the 'Doryphoros' (athlete with javelin) is characteristic. This statue became known



APOXYOMENOS

After Lysippos

as the 'Canon,' as embodying a perfect representation of the ideal human figure.

Characteristic of the transition period is the 'Eirene with Infant Plutus' of Cephissodotus. The stiff folds of the drapery are archaic survivals, but the sentiment in the poise of the head and expression of the faces are indicative of the coming age of emotion and sentiment.

The representatives of the new school are Scopas, Praxiteles (q.v.), and Lysippos (q.v.), who fl. in the 4th cent. BC. In this school representations of the human figure and the minor deities predominate. The restraint and repose of the Pheidias school have given place to the emotional,

the sentimental, and the sensational. Scopas was particularly successful in representing motion and frenzy. The works of Praxiteles chiefly represented the minor deities, and these in their more sensuous aspects. His 'Cnidian Aphrodite' (copy in Vatican) was a nude figure of the goddess about to enter the bath. It was ranked by the ancients next to the Zeno of Pheidias. His statue of Hermes with the infant Dionysus (from Olympia), though exceedingly beautiful, has indications of that softness and sensuality that prevailed in the decline. Lysippus is the last representative of the loftier traditions of Gk sculpture, and he is not guilty of the sentimentality already visible in Praxiteles. His sculpture is rather of the bold, virile, leonine type, as his 'Apoxyomenos' (athlete scraping himself) witnesses.

In the 3rd cent. BC the chief centres of Gk art were Pergamum and Rhodes. Exaggeration and sensationalism are characteristic of the schools, exaggeration of muscle and sinews in male figures and of softness and roundness in female figures; sensationalism in the choice of dramatic and harrowing subjects. Representative of the former school is the figure of the 'Dying Gaul,' of the latter the 'Laocoön' group. These show great technical power. The variety of plastic expression in Gk art needs to be recalled. It ranged from the ideal human type to sensitive portraiture like that of the head of a Gk poet (Naples), 2nd cent. BC, and the figures of Tanagra which give intimate glimpses of Gk life.

In the Graeco-Roman period the art of sculpture is mainly imitative and reproductive. After the sack of Corinth, 146 BC, Athens became a factory of *objets d'art* for the Rom. market. The period, however, produced some beautiful works, inspired by a fine eclectic spirit, if not by creative genius. The loveliest of these are the 'Venus of Melos' (Louvre), the 'Apollo Belvedere' (Vatican), and the 'Diana of Versailles.' The Gk culture was later merged in that of the Byzantine Empire (see BYZANTINE ART), but even in modern times design in pottery and embroidery shows traces of ancient tradition. Painting in Greece to-day (e.g. the work of H. Ghilea) combines a national character with elements borrowed from the school of Paris.

See A. S. Murray, *Handbook of Archaeology*, 1892; F. B. Tarbell, *History of Greek Art*, 1896; H. E. Walters, *Greek Art*, 1903, 1905, and *The Art of the Greeks* (31st ed.), 1934; E. A. Gardner, *Handbook of Greek Sculpture*, 1905; W. J. Anderson and R. P. Spiers, *Architecture of Greece and Rome*, 1907; W. Miller, *Daedalus and Thespis: Contributions of the Ancient Dramatic Poetry to our Knowledge of the Arts and Crafts of Greece* (vol. i), 1929; J. D. Beazley and B. Ashmole, *Greek Sculpture and Painting to the End of the Hellenistic Period*, 1932; L. Curtius, *Die klassische Kunst Griechenlands*, 1938; G. M. A. Richter, *The Sculpture and Sculptors of the Greeks*, 1946; C. Seltman,

Approach to Greek Art, 1948; A. Lane, *Greek Pottery*, 1948.

Greek Church, see EASTERN ORTHODOX CHURCH.

Greek Fire, name applied in general to the different kinds of liquid fire employed in the Middle Ages, but specifically used of a preparation of 'wet fire' invented by an architect named Calinicus, who lived in the reign of Constantine Pogonatus (648-85). He is said to have fled from Heliopolis in Syria to Constantinople, and his 'wet fire' was used at Cyzicus to set fire to the Saracen ships. Exactly what the mixture was is unknown, but Lt.-Col. H. W. L. Hime, after a careful study of all available evidence, decided in his book, *The Origin of Artillery*, 1915, that it differed from the other preparations of the kind in having quicklime as an ingredient, which, when mixed with sulphur, naphtha, etc., took fire spontaneously when wetted.

Greek Language. The ancient G. L. belongs to the Indo-European linguistic family, and was traditionally divided into the 5 main dialects, Aeolic, Doric, Ionic, Attic, and Achaean. Aeolic, the dialect of Lesbos, Boeotia, and Thessaly, has no great literary importance save as the language in which Sappho and Alcaeus wrote. Doric, spoken in the Peloponnesus, Locris, Phocis, and the Dorian colonies and is, in the E. and W. Mediterranean, is particularly characterised by the broad *alpha* (for *êa*) and by a peculiar system of accentuation. It is the dialect of Gk choral poetry in general and is found in the choruses of the Attic tragic writers, as well as in the Sicilian elegies of Theocritus. Ionic, including E. Ionic (coast of Asia Minor, Samos, Chios, and their colonies), Central Ionic (Cyclades), and W. Ionic (Euboea, Chalcis and its colonies in Italy and Sicily, and Eretria), was the language of the earliest extant Gk writers, historians like Herodotus and Herodotus, the Ionian philosophers, most of the elegiac writers, and above all of Homer and the other epic poets. The language of Apollonius Rhodius and other later epic poets is only a scholarly, and sometimes inaccurate, imitation of the Ionic epic sub-dialect. Attic is sometimes regarded as a sub-dialect of the Ionic, with which it agrees in having *êa* for long *alpha*, and in contracting double *epsilon* into *ei* and double *omicron* into *ou*. The digamma *F* has been dropped, as it has except for the purpose of scansion, in Ionic. Achaean included Arcadian, Cyprian, and Pamphylian. The Phocian, Locrian, and Elean dialects (and perhaps a few others) formed a NW. group, but very little is known about it. As the language of the great Athenian writers, Attic naturally came to supersede all other dialects and became the standard classical G. L. through the spreading of Athenian cultural and commercial supremacy throughout the Gk world. It is the basis of the modern G. L. Greek, in its various dialects, had already penetrated to Sicily, S. Italy, S. France, the Sp. coast, and all round the E. Mediterranean, when the conquests of

Alexander the Great made it the *lingua franca*, not only of Asia Minor, but of a good part of the Near East. With the Rom. conquest of the Mediterranean basin the language spread still further, and became the recognised medium of intellectual intercourse in the Rom. world, much as Fr. was to become later in diplomatic and social circles. When the W. Rom. Empire was submerged beneath the barbarian invasions of the 5th cent. AD, Greek disappeared from the W. world for a thousand years, but lived on as the official tongue of the Byzantine Empire until the conquest of Constantinople by the Turks in 1453. The immigration of scholars into W. Europe, which then followed, added impetus to a movement already begun in Italy for the revival of Gk studies; and with the Renaissance Greek was once more reinstated as a learned tongue, though it never again rivalled the universality of Lat. In Greece and the Levant, however, Greek continued as a spoken language, though the passage of time and the intrusion of many Slavonic and Turkish words and forms had wrought radical changes, particularly in the spoken language. The 'b' sound, for example, has vanished entirely, the letter *beta* now representing a 'v' sound; the grammatical construction has been profoundly modified, particularly in the conjugation of verbs, while the pronunciation of the language has been entirely altered by the conversion of the 'pitch' or 'tonal' accents of classical Greek into a 'stress' accent.

Modern Greek is used by about 7,500,000 speakers in the Gk mainland, the Ionian and Aegean Is., the Is. of Crete and Cyprus, Albania and S. Italy, and colonies in Egypt, Gk Britain, and the U.S.A. It is significant that the revival of Gk nationalism at the beginning of the 19th cent. was accompanied and aided by an awakened interest in the anct Gk tongue, initiated by the great scholar Koraeus. This movement took the form of an attempt to restore the purity of the language as far as possible by the removal of foreign words and constructions. As a result it is now possible to distinguish 2 types of speech in modern Greece—the 'demotic' or popular (spoken by the populace at large) and the 'purist' Greek, the official language taught in the schools and written in the newspapers, a conscious imitation of anct usage purified as far as possible from introducing foreign words. There is no doubt, however, that the latter is steadily gaining ground, and that soon the country will speak no other language.

Greek Alphabet (see also ALPHABET).—Modern research agrees with tradition that this was derived from the Semitic. Indeed it is not difficult to trace the connection between these 2 scripts. A comparison of the early forms of the letters sufficiently demonstrates their common origin. The phonetic values of the signs are, mainly, the same in both the alphabets, and, still further, the names of the letters and their sequence are the same. Finally, while the names of

the letters are meaningless in Greek they are words in Semitic languages. Hence the 2 alphabets must be related, and as the Semitic is doubtless the earlier the Greek must depend upon it. When the Greeks took over the Semitic letters they also took over their names.

The date of the adoption of the alphabet by the Greeks is a much vexed question, and various dates have been suggested. In general Gk tradition assigned the creation of the Gk alphabet to the Dark Age, and there are many indications that such a date (about the 12th to 11th cent. BC), roughly speaking, may be right. This dating has been accepted by many eminent scholars (Kenyon, Hogarth, Bury, Wade-Gerry, Larfeld, Szanto, Diringer), while other scholars (Meyer, Kirchhoff, Gercke, Beloch, Driver) suggested the 9th or even the end of the 8th cent.

Was the Gk alphabet first constructed in one place or in sev.? Some scholars hold that the Greeks received the alphabet from the Semites, 'at several points of contact from whence it was logically diffused among neighbouring cities and their colonies' (E. M. Thompson). Others think that all the local varieties derived from one earlier Gk alphabet, the creation of an unknown genius, who must have been a first-rate 'phonetician,' who succeeded in adapting the Semitic, purely consonantal alphabet to an idiom belonging to a different linguistic family, and which could not do without vowels. At the same time the Greeks found certain symbols in the Semitic alphabet representing sounds which they did not possess. These were the glottal '*aleph* and *he*, the pharyngeal *heth* and '*ayin*, and the 'semi-vowels' *waw* and *yod* (see ALPHABET). Four of these Semitic letters ('*aleph*, *he*, *yod*, and '*ayin*') were made to represent the Gk vowel sounds *a*, *e*, *i*, and *o*, both long and short, the signs for *e* and *o* being also employed for the diphthongs *ei* and *ou* (this continued to be expressed by *o* to a comparatively late period). The Semitic *waw* became the Gk *digamma* (= the consonantal *u* sound, akin to Eng. *w*); this sound was given up in dialects (e.g. Ionian) in which the letter, not being needed, was discarded; it survived in other dialects till it became obsolete in classical times, but it continued to be used as the numeral 6. Another form of *waw* supplied the symbol for the Gk 5th vowel sound, *upsilon*. It was placed at the end of the alphabet following *taw*, but it must have been adopted at the same time as the other Semitic signs, for there is no local Gk alphabet which is without it. The Semitic *heth* was adopted in the W. branch of the Gk alphabets (Locris, Elis, etc.) as the rough breathing; at a later stage it was broken up into 2 signs

(H = $\vdash + \neg$; \vdash \neg)

to serve (1) as the rough breathing (*spiritus asper*), indicating the presence of an *h*-sound, or (2) as the smooth breathing (*spiritus lenis*), indicating the absence of

the *k*-sound. In the Ionic and Attic alphabets, the aspirate gradually falling into disuse, the *hēth*, as Gk *ēta*, was adopted to represent the long *e*. (In the earlier Theraan inscriptions, however, the letter *hēth-ēta* occurs in both capacities.) At a later stage of development, when the long *o* began to be distinguished from the short *omicron*, the Ionians created the *omega* (which was an augmentation of the *omicron*), and placed it at the end of the Gk alphabet. The other main adaptations made by the Greeks were (1) the different arrangement of the sibilants; (2) the addition of new consonantal signs, especially the double consonants *phi*, *khi* or *xi*, and *psi*; (3) the disappearance in the E. group (Ionia and Attica) by the 5th cent BC of the letter *koppa* (Semitic *qoph*), which continued to be used as the numeral 90, its place as a letter being usurped by *kappa* (*k*).

The different ways in which these and some other adaptations were carried out permit us to distinguish the various branches of the Gk alphabet. In practice many little states and different is. had each its own variant, but the Ger. scholar Kirchhoff succeeded in laying down a broad div. of the Gk alphabets into the E. group (Ionia, Attica, Corinth, etc.) and the W. (Thessaly, Euboea, Phocis, Locris, Elis, the greater part of the Peloponnesus, etc.). It must, however, be emphasised that many problems, especially the hist. of the Gk sibilants, are still involved in obscurity. The original Semitic sibilants and their names appear to have become confused either in the course of transmission to the Greeks, or rather in the later internal development. The Semitic letter *zayin* seems to be the only one which was adopted as *zeta* in all the local branches, but its pronunciation in early times is not certain and may have varied throughout the dialects between *z*, *zh*, *dz*, and *dzh*. The Semitic *samekh* (which still existed in the Theraan and Etruscan alphabets) was retained, as *xi* with the value of *ks*, in the E. Ionian alphabet, while its name, which became *sigma*, was transferred to the last but one letter of the Semitic alphabet, *shin-sin*. This letter, the prototype of the Gk classical *sigma*, was one of the 2 symbols employed to express the Gk sound *s*. The other symbol (found mainly in Thera, Crete, Phocis, Peloponnesus, etc.) derived from the Phoenician *sade*. These 2 symbols do not appear together in any Gk alphabet, but they do in Etruscan. The Gk additional letters *x* and *psi* expressed the *x* = *ks* and *kh* sounds in the W. group, and the *kh* and *ps* sounds in the E. alphabets. The *psi* seems to have been an ant variant of the Semitic *kaph*.

Gradually, the Gk local alphabets approximated more and more to one another. In the course of the 5th cent. BC the Ionian, especially the Milesian alphabet, penetrated and was officially introduced at Athens in 403, the year of Euclides's archonship. The other states followed in the course of the 4th cent., and by the middle of this century the

Ionian-Attic alphabet became the common 'classical' Gk alphabet of 24 letters.

As the Semitic alphabetic scripts were written from right to left, so in the earliest Gk inscriptions we find the same order followed. Next came the method of writing known as *boustrophedon*, in which the written lines run alternately from right to left and from left to right, like oxen ploughing a field. Early in the 5th cent. writing from left to right became universal.

While this 'classical' alphabet was always retained, with insignificant variations, as the monumental script, more cursive forms, all of them being developments from the classical letters, were employed in writing on parchment, papyrus, wax tablets, and other soft materials. It is also obvious that not every kind of text will be written in the same way. First of all there is the 'book,' in the narrow sense of the word; this was written, as a rule, by an expert scribe in so-called *scriptio continua*; every letter was standing apart, but neither words nor sentences were separated from each other; this writing is known as *majusculae*, or *uncial*. Beside it there was the cursive writing in various forms; the letters became rounded and simplified, and there appeared ligatures of 2 or more signs. Two main types can be distinguished: (1) the cursive of the bureaucracy and of the professional scribe (as seen in anct deeds and documents, in petitions and official letters, etc.); this type later (in the Byzantine period) developed into a very particular kind of fluent, elegant, large writing, in which the vertical element predominated: (2) the individual cursive, which shows a nearly endless variety ranging from the expert handwriting (similar to that of type 1) to the clumsy scribbles of semiliterate people. Gk MSS., anct and medieval, numbering many thousands, form one of the main bases of modern civilisation (see PALAEOGRAPHY), while the tens of thousands of Gk inscriptions (see INSCRIPTIONS) are of paramount importance for the study of anct hist. in all its branches.

The modern Gk alphabet is slightly different from the anct script, and the pronunciation of many letters (especially of the diphthongs) differs from that ordinarily used for the anct Greek.

See I. Taylor, *The Alphabet*, 1899; V. von Wilamowitz-Moellendorf, *Geschichte der Griechischen Sprache*, 1927; C. D. Buck, *Introduction to the Study of the Greek Dialects*, revised ed., 1928; M. N. Todd, *Selection of Greek Historical Inscriptions*, 1933-46, 1948; A. Meillet, *Aperçu d'une histoire de la langue grecque*, 4th ed., 1935; E. H. Sturtevant, *The Pronunciation of Greek and Latin*, 2nd ed., 1940; J. B. Hofmann, *Etymologisches Wörterbuch des Griechischen*, 1950-; D. Düring, *The Alphabet*, 4th impression, 1953, and *The Hand-produced Book*, 1953.

Greek-letter Societies, see FRATERNITIES.
Greek Literature is conveniently divided into 6 periods, viz.: (1) Early literature, ceasing about 475 BC, and embracing

epic and lyric; (2) Attic literature, ceasing about 300 BC, and including the development of drama and prose; (3) Alexandrian literature, ceasing about 146 BC, and producing miscellaneous works of a learned and artificial type; (4) Graeco-Rom. literature, ceasing about AD 529, and occupied mainly with critical and historical treatises; (5) Byzantine literature, ceasing about AD 1453, and yielding principally scholastic works; and (6) Modern G. L.

Classical Literature attained perfection, in all its branches without extraneous influence, and therefore its hist. affords a unique study of the natural order and development of the different species of poetic and prose composition. The first dept of Gk letters to reach maturity was the epic, which arose from selection and unification of loose ballads and folk-songs. This branch of literature may be classified as objective and uncritical. Lyric came next in order of development. In theme it is distinguished by subjectiveness and emotional intensity; in form it makes for artificiality and crystallisation. The lyric epoch was followed by the rise of the Gk drama. The Athenian drama was democratic and individualistic in outlook. In style its tendency was towards naturalness, and thus, while preserving the character of poetry, it assimilated some of the qualities of prose. Lastly Gk prose developed; in style it advanced from the accidental rhythms of the early writers to the carefully systematised cadences and metrical graces of the later writers. While anc. G. L. developed in many directions it nevertheless maintained throughout its entire career characteristics which reflect the distinctive genius of the Greeks. As in her art and in her ethics, the keynote of the literature of Greece is beauty and power in restraint. This moderation, which is to be carefully distinguished from mediocrity, is an essential feature of the classical spirit. True Gk chastity never permitted in artistic conceptions the intrusion of sentimentality, effusiveness, and super-elaboration. There is always perfect harmony and balance in thought and expression, in content and form.

The great epics of Greece are the *Iliad* and the *Odyssey*, whose authorship is traditionally attributed to Homer (q.v.). In the 18th-cent. criticism the unity of the Homeric authorship was disputed, and a highly composite authorship was assumed. The limits of this article prohibit a detailed discussion of the Homeric question, and it must suffice to say that the *Iliad* and the *Odyssey* were undoubtedly inspired by the folk-songs of the ballad epoch, and that their respective unity of thought and perfection of structure compel us to admit that each must have taken its final form from the magic hand of a great poet. The well-spring of the poems is a cycle of anc. Achaean ballads. The Aeolic bards of Asia Minor transfigured and transformed these rude songs, but their final form bears the impress of Ionic genius. The

poems are written in hexameter verses, a metre of unknown antiquity, and occurring in most anc. Delphic oracular responses. The so-called 'cyclic poems' continue the epic hist. They complete the story of Troy, but are inferior in conception and design to the Homeric epics.

The poems of Hesiod (q.v.), the next great poet in the hist. of G. L., form a striking contrast in subject and treatment to the Homeric epics. The Homeric heroes seem almost to enjoy participation in the blithe life of the gods; the atmosphere is clear, the prospect luminous. The hand of fate does indeed loom over gods and men, but the inevitable decrees are accepted with calm and unperturbed submission. For Hesiod the world is rough and rugged, and the heavens are far distant. Nature is a hard task-mistress demanding of man unceasing toil. Hesiod's gospel is veritably a gospel of work. Xenophanes, Parmenides, and Empedocles (q.v.), the early natural philosophers, continued the tradition of didactic poetry.

The so-called Homeric hymns do not synchronise with the composition of the *Iliad* and *Odyssey*. They belong to the 6th cent., and are probably preludes which were sung by rhapsodists at the recitals of the Homeric epics at the Panathenaea.

Gk lyric, like Gk epic and Gk philosophy, was primarily the inspiration of colonists in Asia Minor, the period of colonisation being marked with phenomenal activity in all spheres of thought and action. The chief lyric species were elegiac and iambic. The distinguishing feature of Gk elegiac verse is its universal range of application. Thus Callinus (c. 650 BC) and Tyrtaeus (670 BC) adapt it to martial themes, Mimnermus (620 BC) to erotic, Solon (c. 590 BC) and Theognis (550 BC) to gnomic, and Archilochus (c. 700 BC) and Simonides of Ceos (530 BC) to funereal. Iambic verse approximates more closely to a colloquial form, and hence is best adapted to a satiric and controversial vein. The instrumental accompaniment which had originally been indispensable to elegiac and iambic verse gradually fell into disuse, and melic verse (or verse inseparable from an instrumental accompaniment) was represented by 2 new orders, the Aeolian and Dorian modes. The Aeolian mode was monodic and personal; the Dorian was choral and civic. The greatest achievements in Aeolian verse were attained by Sappho (q.v.); her poetry excels in intensity of passion and beauty of melody. Unsurpassed in the Dorian mode is Pindar (q.v.), whose odes are inimitable in majesty of thought and grandeur of expression.

Tragedy is believed by many to have been gradually differentiated from the dithyramb, a triumphant hymn to Dionysus (q.v.). Arion and Stesichorus are shadowy names in the early hist. of the dithyrambic chorus, but the name of Thespis brings us to the fringe of hist. Thespis first introduced an actor or

answerer (*hypocritēs*), and thus dialogue between the leader of the chorus and the actor was now effectuated. Phrynicus, author of 2 historical plays, *The Capture of Miletus* and *The Phoenissae*, employed without alteration the dramatic framework invented by Thespis, and no further innovation was made till the daring genius of Aeschylus (q.v.) (525-456 BC) startled the Athenian audiences. Aeschylus gave to Attic tragedy the form in which we know it. The reforms which are usually ascribed to Aeschylus are these: (1) He founded the classical div. of plays at the Dionysia. First were represented 3 tragedies (*tragoidiai*), then followed the



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'satyr' play, which had regularly a chorus of satyrs. The only exception was in the nominally 'satyric' plays like the *Alcestis* of Euripides and the *Inachos* of Sophocles. (2) He brought in a second actor. This new departure, providing 2 actors in addition to the leader of the chorus, enabled the dialogue to become more complex, for an actor might take more than one role. (3) He made the dialogue mainly bear the burden of the dramatic action. His chorus, though still playing an independent if somewhat colourless part, is subordinate to the actors. (4) He placed in the rear of the orchestra a wooden booth, the *skēnē*, which served as a dressing-room as well as background to the scene of action; and he is said to have invented scene painting. (5) He made the actor sing as well as the chorus, giving him not only monodies, but also a part in a musical dialogue which he conducted with the chorus. An important result of this was that the original Doric rhythms of choric song became modified by the introduction of both Aeolic and Ionic solo measures, including the iambic and trochaic. (6) He formed

the ponderous tragic style which, until Euripides dared to free himself in part from its conventional fetters, was demanded of all writers of tragedy (consult Aristotle, *Poetics*, 10). The leading thoughts in the drama of Aeschylus are bold and emphatic. There is a power manifest in the universe which makes for righteousness, and by putting himself in harmony with its tendencies man wins happiness. Through suffering man learns the will of the gods, but an insolent and overbearing attitude brings sorrow even unto the 3rd and 4th generations. To Sophocles (b. 496 BC), a younger contemporary of Aeschylus, are also ascribed technical improvements in the construction and production of tragedy. Tradition attributes to him the introduction of a third actor, and (by some) the invention of scene painting. The motive idea in the tragedies of Sophocles (q.v.) is less vast than in those of Aeschylus. The chief interest in the Aeschylus drama is in the ultimate and universal problems; the central issue in those of Sophocles is concerned with individual ethics and psychology. In the elder tragedian man is engaged in a titanic struggle with destiny; the religious conceptions of the younger dramatists have ripened to a mellow loveliness. With Euripides (q.v.), the third of the great tragic writers of Athens, the dramatic atmosphere had quite altered. The sublime elevation and stately repose have vanished before the ferment of moral perplexity and religious doubt. The aim of Euripides is occasional effect rather than sustained solemnity. Tender sentiment and tempestuous passion reflect the clear rays of spirituality. Instead of the natural being transformed into the supernatural, the supernatural is transformed into the natural. There is discord in the plays of Euripides, a discord between character and environment, between rationalistic thought and mythical tradition, between the movement of the plot and the function of the chorus. These are faults of a transition period, for Euripides was too far in advance of his age to harmonise his thoughts with its artistic conventions. But in his humanity Euripides reaches heights undreamed of by his great predecessors. He sympathises with the slave, the barbarian, and the weak. His portrayal of women is characterised by a tenderness and sympathy that are strangely modern. In the *Alcestis* he abandons the dramatic traditions and even introduces children. If the Euripidean drama, as a whole, is unequal, unsymmetrical, there are nevertheless passages whose loveliness and beauty are unsurpassed by anything in G. L.

Comedy, too, had its origin in the cult of Dionysus. The occasion of harvest thanksgiving gave rise to extempore farces, which in the course of time took literary shape. Aristotle, in the *Poetics*, says that comedy sprang from the phallic choruses of these festivals. Such choruses were probably abusive and derisive, and were directed against such personages as were conspicuous enough

to excite the interest of the assemblage. The temperament of the Sicilians was especially conducive to the development of comedy, and in Sicily it first reached literary excellence and acquired permanent value. Epicharmus of Cos (b. c. 530 bc) was the greatest of the early Sicilian comedians. Previous writers had produced the comedy of situation, but Epicharmus created comedy of plot and character. Political satire is, however, absent from Sicilian comedy, which ridicules the type rather than the man. The chorus is altogether absent. Attic comedy falls into 3 divs.: the Old, the Middle, and the New. The Old Comedy fl. from 450 to 390, and was characterised by broad and undisguised raillery of contemporary events and living personages. It was a product of the political independence and fearlessness of the Athenian democracy. As the democratic constitution of Athens waned comedy ceased to be personal. Middle Comedy fl. from 390 to 320. It satirises movements and factions, philosophy, literature, and other contemporary arts; but personal satire and the chorus have practically disappeared. The New Comedy fl. from 320 to 250. It is distinctly a comedy of manners and character; domestic intrigue takes the place of political situation, and the 'sock' is worn by the man in the street instead of the statesman. Aristophanes (q.v.), far eclipses contemporary writers of the Old Comedy. His belief in the high calling of his art saved him from the grotesqueness and coarseness which before his time seemed inseparable from comedy. He was, above all, a patriot, and it is his pride in the ancient institutions and hist. of his country that impels him to use his ridicule as a scourge against adventitious experiments and innovations in civil gov. and morality. Conservative in his ethics, he vehemently attacks the disquieting influence and negative teaching of the Sophists. Socrates's intellectual and philosophical empirics he regarded as a public danger worthy of reprobation and exposure. The charm of his style is unrivalled, except in the Attic idiom of the dialogues of Plato. But Aristophanes is a poet as well as a comedian. Passages of exquisite beauty and sentiment are intermingled with mockery and raillery. The gradations of the transition from the Middle to the New Comedy are not clearly defined. In some of the plays of Aristophanes the political licence and overt criticism are already abandoned. Thus in the *Plutus* he discards concrete censorship and adopts symbolical farce. For examples of the New Comedy we were for long dependent on the Lat. imitations of Terence (q.v.), but the fragments of Menander (q.v.) discovered in 1906 afford us a representative body of that dramatist's original work. Menander excels in his delicate delineation of character, the subtle construction of his plot, and the consummate purity of his idiom.

Gk prose, as is natural, attained complete development at a much later date

than poetry. The earliest examples of prose in Greece belong to the 6th cent. bc, and these are chiefly records and chronicles quite unpretentious in style and expression. The Ionian philosophers made considerable advances, but their aim also was mainly didactic, and where style is studied it is for lucidity. Herodotus (q.v.), the historian (c. 484-c. 425 bc), is the first conscious prose stylist. The structure of his hist. is dramatic. His inspiration was the momentous drama of the Persian wars. He traces the conflict of E. and W. up to its great crisis, marking the intricate chain of cause and effect with insight worthy of an evolutionist, but he abandons the role of critical and scientific historian in his acceptance and narration of legends whose value is purely dramatic and artistic. It is the unity of his design and the graphic drama of his narrative that won Herodotus the title of 'the Homer of historians.' In the structure of his sentences Herodotus adopted the loose style. Thucydides (q.v.) (c. 455-c. 399 bc), the next great writer of hist., is a contrast to his predecessor, both in conception and design. The field of Thucydides's activity is the Peloponnesian war. He wrote when Greece was no longer self-assured and buoyant in the glory of victory. She was torn by intestine strife, and was the sport of unprincipled statesmen and generals. The scene presented much food for reflection and moralisation. The hist. of Thucydides is no heroic epic. incisive, sedulous, judicial, the genius of Thucydides as a pure historian is undeniable. He makes no parley whatever with seductive legends and traditions irreconcilable with a calmer rationality. He sifted evidence meticulously, and indefatigably consulted all available documents relative to his subject. Only in his speeches did he allow himself freedom. These he meant to be true to the spirit and not to the letter. His style, too, is illustrative of his mental character. He builds his sentences on the periodic system, lucid, pregnant, and severe. His idiom is pure and unadulterated Attic. Xenophon (q.v.) (c. 430-c. 357 bc) was essentially a man of action. He therefore excels in brilliancy, vividness, and freshness, but both in intellectuality and style he falls far below the level of Thucydides. His finest work is perhaps the *Anabasis*; racy, virile, dramatic, the narrative compels interest, but is neither wholly trustworthy nor convincing. Political economist, historian, philosopher, the range of Xenophon's activities is wide, but he is lacking in intellectual power and thoroughness. Plato (q.v.) (427-347 bc) is as great a stylist as he is a philosopher, and praise can go no higher. Richness without satiety, grace without elaborateness, and charm without conceit make the dialogues of Plato models of literary excellence for all time.

Though eloquence was appreciated and cultivated in Greece as far back as the time of Homer, oratory as a science and art was only first formulated at the time

of the Peloponnesian war. The chief reason for the lateness of the development of the rhetorical art is that it depends on the study and cultivation of prose composition, and this, as had been said, matured much later than poetry. It was in Sicily that the first treatises on rhetoric were written, the demand for such systems being caused by the need of effective speech in the innumerable lawsuits which arose during the redistribution of land on the overthrow of the Syracusan tyranny. Corax (fl. 467 BC) and his contemporary, Tisias, were the earliest of the Sicilian rhetoricians, but their theories were rudimentary, consisting chiefly in the differentiation of the various parts of a speech. The argument from probability had a conspicuous place in their method. Gorgias of Leontini, sent from his native city in 427 BC as an ambas. to Athens, attracted the admiration of the Athenian audiences by the splendour and brilliance of his oratory, and hence the art was transplanted to Attic soil. The style of Gorgias was florid and luxuriant. The Alexandrian critics selected 10 Attic orators as being of the foremost rank. Each orator exemplified a peculiar excellence in style. The perfect harmony and balance of all the excellences of style were attained by Demosthenes (q.v.) (384-322 BC), the greatest of the Attic orators, who blends perfectly the virtues of his predecessors and reproduces none of their excesses. But the secret of Demosthenes's enormous power of eloquence was a moral force generated from the soul and quickening to vital potency the technical graces and devices which he commanded. Alexander, after the sack of Thebes, demanded the surrender of the Athenian orators, and Gk liberty and Gk oratory perished side by side. Robbed of its political significance, oratory in the Macedonian age degenerated into declamation and style into ornament. Asiatic affectation conquered Attic purity.

But the victories of Alexander diffused Gk letters and Gk culture over half the world. Greek became the 'common tongue,' and thus the spread of Christianity was facilitated by the victories of the pagan sword. It was in Egypt that the scattered Hellenic seeds produced the most exuberant growth. Alexandria became the cap. of the intellectual world; but the new G. L. was vastly different from the autochthonous literature of free Greece. The spirit of Alexandria was cosmopolitan and not patriotic. The promoters of the new literature were courtiers and grammarians, and their work is characterised by learning and artificiality. Genuine inspiration and high seriousness are lacking in the poetry of Apollonius Rhodius (c. 295-c. 230), Aratus (fl. 270 BC), author of *Phaenomena*, which was very popular in ant. times, Lycophron (b. c. 320 BC), author of an extant poem, *Cassandra*, in which the prophetees predict the fall of Troy, and Callimachus, chief librarian of the famous library at Alexandria from c. 260 until his death c. 240. But the Sicilian Theocritus

(fl. 270 BC), although enticed to the Alexandrian court by the lavish patronage of Ptolemy Philadelphus, never lost the freshness and warmth of sentiment which the rural surroundings of his youth had inspired. His idylls of Sicilian pastoral life are representations of genuine rustic character and incident, and are clothed in the rich sweetness and charming simplicity of the Doric idiom. Moschus (fl. c. 150 BC) and Bion (fl. c. 100 BC) continued the pastoral tradition at Alexandria, but though their elegies excel in grace and delicacy, in naïveté and spontaneity, they pale before the Theocritan idyll.

When compared with the literature of free Greece, that of the Graeco-Rom. period is inferior. But though the Graeco-Rom. period produced no literary work of the highest merit, it nevertheless gave proof of a vigorous intellectual activity, which is all the more remarkable in face of the national calamities. The historian Polybius (c. 201-c. 120 BC), in spite of the immense scope of his work and the wide field of his activities, is a sane and reliable thinker, and the style of his *General History* was much admired, though it exemplified post-classical innovations in vocabulary and phraseology. Plutarch's (b. AD 46) *Lives* will live on account of their dramatic power. The wit and satire of Lucian (b. c. AD 120) are always lively and refreshing. Pseudo-Longinus's (1st cent. AD) work *On the Sublime* shows a singular appreciation of beauty and keenness of critical insight.

Byzantine Literature was purely retrospective and produced nothing of permanent value, excepting numerous histories and chronicles which are important sources for that long period. Chief among the Byzantine historians are Procopius (fl. AD 550), Photius (fl. 850), Constantine Porphyrogenitus (fl. 940), Zonaras (fl. 1120), and Laonicus Chalcondyles (fl. 1450), and George Phrantzes (fl. 1480). The most famous Byzantine critics were Photius (fl. 850), the anonymous author of the lexicon called *Suidas* (c. 970), and Eustathius (fl. 1170).

Modern Literature.—Owing to the Byzantine divorce between the literary and spoken languages, little appears in modern Greek before the fall of Constantinople except the satirical poems of Theodore Prodromus (12th cent.), versions of the epic *Digenes Akritas*, and rehandlings, often charming, of W. romances. In the 16th and 17th cents. the union of Gk sensibility and W. influences had fertile results in Cyprus and still more in Crete, where there appeared, besides a varied drama, the romantic epic *Erotokritos* of Vizenetos Kornaros. The Turkish domination crippled literary activity, driving scholars into exile, but a rich store of folk poetry, singing of love, death, and the exploits of the Klephts, continued to be produced, inspiring poets to this day. Apart from *The Book of Alexander the Great* and similar traditional material, prose was largely didactic, and the development of

an expressive prose literature was hindered by linguistic uncertainties. Among the scholars who prepared abroad the spiritual and political revival of Greece were Adamantios Korais (1748-1833), noted for his letters and his eds., with wide-ranging introductions, of aet. Gk authors, and Konstantinos Regas Velestinlis (1757-98), best remembered now for his war-hymn.

Shortly before the Revolt, Ioannes Velaras (1771-1823) produced poetry whose sincerity marks it out from the prevailing Anacreontics, and a little later in the Ionian Is. an important school arose, headed by Dionysios Solomos (1798-1857), whose latest work shows a remarkable combination of depth and delicacy, and the austere and archaistic Andreas Kalvos (1792-1869). In Athens, however, the marriage of Fr. and Ger. romanticism with linguistic 'purism' resulted in works which it is difficult now to read with profit: of this school the chief exponents were Alexandros and Panagiotis Soutsos (1803-63, and 1806-68), and Alexandros Rizos Rankaves (1809-1892). The excesses of their followers turned attention to prose, in which nothing of literary note had been pub. since the reminiscences of Makrygiannes (1797-1864). In 1866 appeared the anti-romantic *Pope Joan* of Emmanouel Roides (1835-1904), followed by short stories by various authors, and from 1897 onwards by the writings of Giannes Psychares (1854-1929), which both championed and exemplified the use of the popular language.

The 'generation of 1880' brought in a poetic revival. In the work of Kostas Palamas (1859-1943) the folk tradition, the influence of Solomos and of the Fr. Parnassians, and all the strivings, triumphs, and tragedies of aet., Byzantine, and modern Greece seem to flow together in poetry of great majesty, intensity, grace, and technical versatility. Somewhat apart stands the Alexandrian K. P. Kavaphes (1868-1933), whose sensitive irony found expression in moving vignettes of Hellenistic and Byzantine life.

In prose the novel and short story were practised by the prolific Gregorios Xenopoulos (1862-1951), who also wrote plays, by Kostas Theotokas (1872-1923), and recently by Angelos Terzakes, Panteles Povelakes, Georgios Theotokas, and Nikos Kazantzakis. In recent poetry there stand out the syncretistic mysticism and love of humanity, expressed in a language of controlled richness, of Angelos Sikelianos (1884-1951), the nihilistic exuberance of Kazantzakis (1882-1957), the sense of the Gk scene and spirit in Odysseas Elytis (b. 1912), and the condensed imagery and crystalline language of the Smyrniot Giorgos Seferis (b. 1900), in whom the burden of the past and the tragedy of the present produce an almost intolerable tension.

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Greek Philosophy originated in the Ionian colonies of Asia Minor. The cults of the Gk mainland were essentially local, so the early colonists left their gods behind them in the motherland and settled in their new home with minds free for speculative inquiry. The Ionian philosophers of the 6th cent. bc were principally physicists and cosmologists. They sought to reduce the universe to a first principle or single element. Thus Thales postulated that the origin of all things was water. Anaximander took for his first principle 'the indeterminate.' Anaximenes selected air as the primary substance, from which he held the universe was evolved by the processes of rarefaction and condensation. Heraclitus, the last of the Ionian school, adopted fire as his basic element. He was also the originator of the theory that the universe is in perpetual flux. The theory of numbers played an important part in the Pythagorean doctrines. Harmony was built on numbers and was, according to Pythagoras, the key to the universe. Among the religious tenets of the sect the doctrine of metempsychosis had a foremost place and inspired the brotherhood to observe a life of religious asceticism. The Pythagorean philosophy was largely influenced by the Orphic mysteries, in which immortality and spiritual purification were the leading ideas. Xenophanes was the founder of the Eleatic school. He was the first Gk rationalist, boldly attacking the anthropomorphism of the Gk Pantheon. His theory of the universe is based on 'the one' as opposed to 'the many,' i.e. on an essential unity as opposed to an essential plurality. Parmenides is the author of the apothegm, 'The 'ent' (on) is, the 'nonent' (mē on) is not.' He identifies the 'ent' with truth, knowledge, and the 'one.' His

disciple Zeno, to disprove 'the many,' invented some famous paradoxical arguments relative to space and time. A reaction followed in favour of 'the many' as opposed to 'the one.' Empedocles held that the evolution of the universe was conditioned by the segregation and aggregation of the 4 elements under the influences of love and strife. Anaxagoras postulated 'atoms' and a 'governing mind.' Democritus and the atomists conceived the universe as generated from atoms falling in space. They postulate the power of deflection in the atom, and hence made aggregation possible.



ZENO

The sophistry of the humanists was a complete reaction from the natural philosophy of the physicists. In the teachings of the new school the macrocosm was of secondary importance as compared to the microcosm. Though the Gk sophists had no doctrine in common, they all based their speculations on an initial scepticism. Their influence was negative rather than positive, destructive rather than constructive. The famous aphorism of Protagoras is characteristic of the sophists' mode of thought—'Man is the measure of all things, of what is, that it is, and of what is not, that it is not.' The empirics of the sophists did not immediately benefit Gk thought and morality, but they paved the way for the advent of Socrates.

Though Socrates is justly called the father of critical philosophy, he never committed his doctrines to writing. Our knowledge of his theories and principles is mainly dependent on the writings of Plato, Aristotle, and Xenophon. Socrates

followed the sophists in basing his theories on a primary scepticism or agnosticism; he was also at one with the sophists in applying empiricism as a final infallible test of all theories. The dialectical method of philosophical inquiry was the invention of Socrates. He himself assumed ignorance, and by differential interrogation he elicited from some bystander an opinion on the subject he wished to investigate. Starting with this dogmatic assertion of the respondent, he proceeded by a systematic series of questions and answers to lead his interlocutor up to a consequence inconsistent with his primary proposition. This was the so-called *elenchos*, or destructive process; the false opinion has been swept away, and the mind is now unprejudiced for the receipt of a substitute. The new opinion was reached by induction, from the respondent's admissions in a fresh series of interrogations. Most often the subject of this philosophical research was a definition, and the mass of definitions attained formed Socrates's ethical system. Virtue, he held, consisted in the knowledge of such definitions and opinions; for right action, he conceived, was the logical consequence of right knowledge. Virtue is knowledge and knowledge is the 'good.' The proof and justification of these Socratic axioms were found in utility. It is important to bear in mind that, contrary to an earlier view, the Socrates of Plato's dialogues is not in all respects the historical Socrates. This fact seems to have been recognised by Aristotle. The truth is that, by attempting to define common terms, Socrates concentrated attention upon universals, but he did not conclude that the universe exists apart from the particulars. He must not, therefore, be considered as the originator of the Ideal theory.

The Platonic hypothesis is, briefly, that transcending the plural phenomena, which are mutable, imperfect, temporal, generated, and opined, there are single ideas which are immutable, perfect, eternal, ungenerated, and known. Beyond the ideas is the idea of ideas, the 'supreme good.' The ideal life is the philosophical life of approximation to, and contemplation of, the ideas. The soul is akin to the eternal ideas; the body is related to the ephemeral phenomena. The theory of ideas was essentially akin to the Pythagorean theory of numbers; but Plato's recognition of unity and numbers as something apart from sensibles, and his introduction of the Forms, were undoubtedly due to Socrates's insistence on definition.

Aristotle bodily rejects Plato's theory of ideas. His thinking is inductive. According to him, it is the particular which exists and can be known. From the particular his metaphysical or transcendental hypotheses are derived. Aristotle's system of ethics is based on empiricism. Man's chief end is the attainment of true happiness, and happiness consists in an energy of the soul, which accords to virtue. Virtue is of 2

grades, moral and intellectual. Moral virtue is attained when man's rational being correctly governs his appetitive and emotional being. The prime virtues are 9, of which 7 are moral and 2 are intellectual. The moral virtues are courage, temperance, liberality, munificence, magnanimity, self-respect, and gentleness. These virtues are really 'means' between immoral 'extremes,' e.g. courage is a mean between rashness on the one hand and cowardice on the other. Towards the attainment of these virtues a sufficiency of the world's goods contributes. The intellectual virtues are judgment and wisdom. The highest life consists in the exercise of the intellectual virtues, and is the philosophical life of contemplation. The moral life consists in social action, and is inferior only to the contemplative life.

The Academic school founded by Plato and the Peripatetic school founded by Aristotle are the prin. philosophical orders of Greece. The minor schools which arose diverged from the 2 rival systems and became extravagantly metaphysical or extravagantly material.

Epicurus dismissed the abstractions of the speculative idealist and founded a new philosophy on the sensations of the practical materialist. The senses were regarded as infallible, and the chief good in life was happiness. But happiness is of 2 kinds. There is exciting carnal pleasure and there is also tranquil mental pleasure. The latter Epicurus pronounced supreme. In this theory of the universe Epicurus revived the atomism of Democritus. All that is is corporeal and composed of atoms; soul itself is but a harmonious combination of finest atoms.

The Stoic school was founded by Zeno; its doctrines are largely eclectic. Antisthenes, an immediate follower of Socrates, had founded the Cynic school, whose chief aim was an austere asceticism. The Cynics taught that virtue was alone worthy, and happiness was madness. A minimum of the world's goods was essential for the practice of the virtuous life. These tenets Zeno at first embraced, but latterly modified with views borrowed from various antithetical systems. The Stoic doctrines gravitated round 2 central and corresponding ideas—the unity of the macrocosm, or universe, and the unity of the microcosm, or man. The macrocosm was conceived as a living organism governed by intelligence, which underwent transformation from, and reabsorption into, its primitive substance or being. The microcosm also is governed by intelligence, survives death, and attains thereby true being. The basis of Stoic ethics is harmony between the microcosm and the macrocosm. Such harmony is attainable by man when he leads a life of moral virtue. There are no gradations between good and evil. The ideal man of the Stoic philosophy is self-sufficient, free, misled neither by error nor emotion, and in no wise inferior to a god. But while the Stoics emphasised self-sufficiency they did not neglect the duties of social

life. All men, whether Greek or barbarian, bond or free, were citizens of the world-city of God. The humanity inspired by these doctrines tempered the exclusiveness and rigidity of Gk patriotism, and brought comfort during the stress of national calamities. Stoicism was in complete harmony with the finer Roman ideals. Its most beautiful and noble interpretation is the book of *Meditations* by the Rom. emperor, Marcus Aurelius. It was the one lamp which shone in the spiritual darkness of the empire, and no remains of antiquity present a nobler view of philosophical heathenism.

See T. Gomperz, *A History of Ancient Philosophy* (trans.), 1901-12; L. Robin, *Greek Thought and the Origin of the Greek Scientific Spirit* (trans.), 1928; E. Zeller, *Outlines of the History of Greek Philosophy* (13th ed.), 1931; J. Burnet, *Early Greek Philosophy* (4th ed.), 1948; C. J. de Vogel, *Greek Philosophy*, 1953.

Greek Revival, see ARCHITECTURE, 8.

Greely, Horace (1811-72), Amer. journalist and politician. In 1833, in partnership with a fellow workman, F. V. Story, he pub. the first cheap paper in New York, called the *Morning Post*. This paper failed, and after many adventures with sev. newspapers, G. estab. his reputation as the editor of the *Jeffersonian*, the *New Yorker*, and the *Log Cabin*. In 1841 he founded the *Tribune*, a paper which greatly influenced public discussions of the time. He was among the first violently to advocate the emancipation of slaves; it is said that later he influenced Lincoln to issue his proclamation of emancipation. In the Republican Convention of 1860 he was a stout supporter of Lincoln and helped to secure his nomination as president. He pub. many works, among them *Hints toward Reforms*, 1850, *History of the Struggle for Slavery Extension*, 1856, and *Recollections of a Busy Life*, 1868.

Greely, city of North Colorado, U.S.A., cap. of Weld co., in a fertile valley between the Cache la Poudre and S. Platte rivers, and served by the Denver Pacific Railway. It is a rail centre, and there is food processing (beet-sugar, flour, canned vegetables, beverages). G. is the site of the Colorado State College of Education. Pop. 20,354.

Greely, Adolphus Washington (1844-1935), Amer. Arctic explorer. In 1881 he was appointed to command an Arctic expedition, with the purpose of establishing a chain of 13 stations about the North Pole for scientific and meteorological observations. He sailed from St John's, Newfoundland, in the *Proteus*, with 24 men. A detachment of his expedition under Brainwood and Lockwood penetrated to a higher lat. than any had attained before. G. and his companions suffered extraordinary hardships. Three separate relief expeditions were sent after him: the third, commanded by W. Scott Schley in 1884, arrived at Cape Sabine and found G. and 6 of his companions out of the 24 on the point of starvation; the rest had perished. His

scientific records and a valuable collection of specimens were saved. Became major-general, 1906. Pub. *Three Years of Arctic Service*, 1885. *American Explorers*, 1894, *Handbook of Arctic Discoveries*, 1896, *Handbook of Polar Discoveries*, 1909, *Handbook of Alaska*, 1909, *True Tales of Arctic Heroism*, 1912, and books on various climates. See G. W. Melville, *In the Lena Delta: the Greely Relief Expedition*, 1885; and W. Schley and J. Soley, *Rescue of Greely*, 1885.

Green, Anna Katherine, see DETECTIVE STORY.

Green, Charles (1785-1870), aeronaut, the most famous Victorian professional balloonist. His first ascent was in 1821, when he pioneered the use of coal-gas. The most important of his 500 or more ascents was the non-stop flight from London to Weilburg (480 in.) which he made in 1836 with Lt. Holland and M. Mason, a long-distance record starting from England, not exceeded until 1907.

Green, John Richard (1837-83), historian. He was b. at Oxford, and educ. at Magdalen College School and at Jesus College, where he won an open scholarship. In 1860 he took holy orders and became a curate in London. In 1866 he was appointed incumbent of St Philip's, Stepney. He studied hist., and at this time wrote frequently for the *Saturday Review*. His health broke down. His views on the teaching of the Church of England changed, and he retired from the Church and accepted the post of librarian at Lambeth. He then devoted himself entirely to hist. In 1874 he pub. his *Short History of the English People*, a brilliant picture of the social and economic evolution of Eng. life, in contrast to the usual political histories. This became exceedingly popular. His style is vivid and interesting, and he made the reading of hist. a pleasure to thousands who had formerly regarded it as tedious and dry. In 1882 he wrote the *Making of England*, and in 1883, *The Conquest of England*. After his death his wife finished the last-named book. Mrs G. (Alice Stopford) helped considerably in her husband's work and herself also wrote valuable historical works, especially relating to the early hist. of Ireland. See C. Tait, *Analysis of English History based on Green's 'Short History of the English People'*, 1897; and J. (Viscount) Bryce, *Studies in Contemporary Biography*, 1903.

Green, Julian Hartridge (1900-). Amer. novelist, b. Paris of Amer. parents. He was educ. at a Fr. lycée and the univ. of Virginia, where from 1920 to 1930 he was on the staff of the hist. dept. His first novel, *Avarec House*, 1926, won him immediate recognition, and was followed by *The Closed Garden*, 1927, *The Dark Journey*, 1929, *Christine*, 1930, *The Strange River*, 1931, *The Dreamer*, 1934, and *Midnight*, 1936. All these were originally written in Fr. *Personal Record*, 1939, and *Memoirs of Happy Days*, 1942, are autobiographical.

Green, Matthew (1696-1737), Brit. poet and Quaker. He is known as the author

of *The Spleen*, 1737, a mild satire in octosyllabic couplets on the subject of low spirits; it was admired by Pope and Gray.

Green, Thomas Hill (1836-82), philosopher, b. Birkin in Yorks, of which his father was rector; educ. at Rugby and at Balliol College, Oxford; elected fellow, 1860. He spent his life in teaching, chiefly as lecturer on philosophy and as Whyte's prof. of moral philosophy, from 1878 till his death. His pub. works were few; apart from his introduction to the standard ed. of Hume, 1874-8, his philosophy is stated in the *Prolegomena to Ethics*, 1833, ed. by H. C. Bradley, 1883, and the *Principles of Political Obligation*, 1895. His collected works were pub. and ed., with memoir, in 3 vols., by R. L. Nettleship, 1885-8. See also W. H. Fairbrother, *Philosophy of T. H. Green*, 1896; H. Sidgwick, *Green's Ethics*, 1902; J. (Viscount) Bryce, *Studies in Contemporary Biography*, 1903; and J. H. Muirhead, *The Service of the State, Four Lectures on the Philosophy of T. H. Green*, 1908.

Green, William Edward, see FRIESE-GREENE.

Green, see PIGMENTS.

Green Bay: 1. City, port, and railway centre, cap. of Brown co., Wisconsin, U.S.A., where the Fox R. flows into G. B. of Lake Michigan, 100 m. N. of Milwaukee. It has fisheries and limestone quarries, ironworks and machine shops, and manufs. cheese, paper, and clothing. It is the site of the first permanent settlement of Wisconsin, by the Fr. in 1701, as well as of the Neville Public Museum. Pop. 52,700.

2. Arm of Lake Michigan at the N. end, reaching 100 m. SW., 10-20 m. wide, between the upper peninsula of Michigan and Door Peninsula of Wisconsin.

Green Belt. The idea that a tn should have around it a permanent belt of open country can be traced far back into hist. The Levitical Cities of 13th cent. BC and Jerusalem of 6th cent. BC had belts of pasture land (see Num. 35, Lev. 25, Ezek. 45, Neh. 12). Anc. Roun. tns had their Designated Fields. The ideal tns in More's *Utopia*, 1515, and the communities proposed by John Bellers, 1696, and Robert Owen, 1817, were to have wide country belts. Attempts were made in Acts from Elizabeth to the Commonwealth to preserve such a belt to check the spread of London, without success. The plans of Adelaide, South Australia, 1837, and sev. New Zealand tns, 1839-47, provided for surrounding park belts.

The modern conception of 'agricultural' or 'rural belts' round and between tns is directly due to Sir Ebenezer Howard and the Garden Cities (qq.v.); the use of the term 'green belt' in the same sense is due to Sir Raymond Unwin (*Reports of Greater London Regional Planning Committee*, 1929 and 1933). The London Co. Council in 1935 initiated a project for acquiring land in conjunction with other authorities for G. B. reservations round London, and this, supported by the Green Belt (London and Home

Counties) Act, 1938, resulted in the safeguarding of 26,500 ac., much of which remains agric. Vastly larger reservations were, however, necessary for the true G. B. conception. Enthusiasts for countryside preservation have done much to make town-dwellers conscious of the value of unspoiled country within their reach. The Town and Country Planning Act, 1947, provided for the first time a national compensation system that makes possible the restriction of building on large areas adjoining towns (see TOWN AND COUNTRY PLANNING).

In April 1955 the Minister of Housing and Local Gov. (Mr Duncan Sandys) issued a circular (No. 42/55, H.M.S.O.) to planning authorities on the importance of checking urban sprawl, safeguarding the surrounding countryside, and preventing towns from merging into one another by the formal designation of clearly defined G. B.s. Wherever practicable the G. B. should be 'several miles wide' so as to preserve 'an appreciable rural zone' all round the built-up area. Many authorities have responded with sketch plans for G. B.s, and with support of the ministry are restricting building in them pending their formal incorporation in development plans. Planning in Great Britain thus seems to be moving towards a pattern of towns of defined extent on a background of open country (see TOWN AND COUNTRY PLANNING).

Three 'Greenbelt Towns' were founded by the U.S.A. Federal Gov. under the Roosevelt administration, 1935. Residential communities rather than complete towns, they have had influence as an attractive application of the G. B. principle. See C. Stein, *Towards New Towns for America*, 1951; London Co. Council, *Green Belt Around London*, 1956; Town and Country Planning Association, *Green Belts: Their Establishment and Safeguarding*, and Minister's comments thereon in *Town and Country Planning*, Mar. 1956; Ministry of Housing and Local Government, *Report for 1955* (H.M.S.O.), 1956; and the Ministry of Housing and Local Government's *Circular 42/55*.

Green Chaffer, see ROSE BEETLE.

Green Cloth, Board of, committee of the Brit. royal household, taking its name from a green-covered table at which it has long been a custom for the board to sit when transacting business, which is to examine and pass all the household accounts. At one time it also had the power to punish offenders within what was known as the 'verge of jurisdiction,' or the precincts of the palace. The board is presided over by the lord steward, and consists of the leading officials of the household.

Green Earth, mixture of magnesian, ferrous, and aluminium silicates of uncertain composition found in cavities and veins of basaltic igneous rocks. It is evidently a secondary product resulting from altered pyroxene, amphibole, etc., and may resemble serpentine or chlorite. *Glauconite* is a form met with in some of the sandstone of the Cretaceous system.

Green Howards, The (Alexandra, Princess of Wales's Own Yorkshire Regiment), Brit. regiment, formerly the 19th Foot. Formed in 1689 from companies raised at the time of William III's landing in 1688, it served under Marlborough at Malplaquet. From 1738 to 1748 the Hon. Charles Howard was its colonel, and its facings were green. From these peculiarities the name 'Green Howards' arose, to distinguish it from other regiments with Howards as colonels. Further service was in Flanders, Belle Isle, America, India, Ceylon, West Indies, North America, and in the Crimea. Honours were also gained in Tirah and in the South African campaigns. During the First World War it raised 24 battalions and served in France, Flanders, Italy, Gallipoli, Egypt, and N. Russia. The regiment served in the Third Afghan War, 1919. In the Second World War the regiment fought in France in 1939 and in Norway in 1940, and ended its war service in 1945 on the Baltic coast of Germany. Four battalions served in North Africa, at Azala, Alamein, and in particular at the Mareth Line, which they broke by frontal assault. These battalions were also at the Sicily and Anzio beach landings. Three V.C.s were awarded.

Green Linnet, see GREENFINCH.

'Green Mountain State', see VERMONT.

Green Mountains, range of mts in Vermont, U.S.A., a part of the Appalachian system. Highest peak, Mt Mansfield (4393 ft).

Green Point, suburb of Cape Town, Cape Province, South Africa.

Green River: 1. Riv. of the U.S.A. It forms one of the 2 great streams which ultimately form the Colorado. It rises in the Wind R. Mts in W. Wyoming and has a total length of about 730 m., flowing through deep canyons, which it cuts out for itself through the rocks of the Uinta Mts.

2. Another Amer. riv., which is the largest trib. stream of the Ohio. It rises in Kentucky and joins the Ohio near Evansville, Indiana. Length 350 m.

Green Room, probably a corruption of 'scene room,' i.e. the room in which players waited for their scenes (appearances) on the stage. It was adjacent to the stage and they could hear their cues. The term 'scene room' occurs in 17th-cent. records; later in the same period the term 'green room' crept in and ultimately 'scene room' vanished. It was the social centre of the theatre for the players during the many years when private dressing-rooms were scarce or non-existent, and there was just one room for the men and another for the women. There plays were read to the company and there they received their visitors. There were social regulations, and only players of a certain rank and salary were entitled to use the G. R. for social purposes. Another suggestion for the origin of the term is that since actors suffer from 'stage glare' caused by the artificial lighting of a theatre, the waiting-room walls were coloured green as an antidote to this

affliction of the eyes, green being noted as a restful shade. G. R.s exist no longer; the last in use was at the Haymarket Theatre, London.

Greenaway, Catherine (Kate) (1846-1901), artist and illustrator of books, b. London. Her father was John G., an engraver and draughtsman. She studied at South Kensington and at the Slade school. In 1868 she first exhibited water-colour drawings at the Dudley Gallery, London. In 1873 she began to illustrate for *Little Folks*, and commenced her series of Christmas cards for Marcus Ward; they were full of quaint beauty and charm and became extremely popular. In 1877 she began to draw for the *Illustrated London News*. The charming freshness of her illustrations in her books, one of which, *Under the Window*, 1879, sold to the extent of 150,000 copies, made her famous. Her drawings of children, dressed in the style of the early 19th cent., are full of artistic grace and delicate quaintness. Among her best-known illustrated books are *A Birthday Party for Children*, *The Pied Piper of Hamelin*, *Mother Goose*, and *Little Ann*. See M. H. Spielmann and G. S. Layard, *Kate Greenaway*, 1905.

Greenback Party, Amer. political party formed in 1874 which advocated that bank and corporation currency should be prohibited, only gov. currency should be permitted, and coin should be paid only for interest on the national debt. It ceased to exist as a party in 1878.

Greenbacks, popular name of the legal tender circulating notes of the U.S.A., so called because the back is printed in green ink. Treasury notes were first issued of necessity to provide funds for the Civil War in 1862: there were 3 of these issues, the first in Feb., the next in July 1862, and the last in Mar. 1863. The notes soon depreciated in value and fell to 35 cents on the dollar. In 1866 Congress agreed to a reducing act; in 1868 further reduction was prohibited. The vol. of G. began to increase in 1872, and in 1874 the maximum was fixed at \$382,000,000.

Greenbushes, post tn of W. Australia, and also one of the chief tin-bearing dists. of W. Australia.

Greenood, see COAL-FISH.

Greene, Harry Plunket (1865-1936), Irish singer. He studied at Dublin, Stuttgart, Florence, and London, and was highly successful both in Europe and in America.

Greene, Henry Graham (1904-), novelist, b. Berkhamsted, Herts. Educ. there and at Balliol College, Oxford, where he ed. the *Oxford Outlook*, he was a sub-editor on *The Times* from 1926 to 1930. In 1927 he was converted to Rom. Catholicism. In 1935 he visited Liberia, of which he wrote in *Journey Without Maps*, 1936; *The Lawless Roads*, 1939, tells of his experiences in Mexico. In 1940 he was literary editor of the *Spectator*, and from 1941 to 1944 worked at the Foreign Office. His novels include *The Man Within*, 1929, *The Name of Action*, 1930, *Slamboul Train*, 1932, *It's a*

Battlefield, 1934, *A Gun for Sale*, 1936, *Brighton Rock*, 1938, *The Power and the Glory*, 1940, which was awarded the Hawthornden prize, *The Heart of the Matter*, 1948, *The End of the Affair*, 1951, *Loser Takes All*, 1955, and *The Quiet American*, 1955. *The Living Room*, 1953, and *The Polling Shed*, 1958, are plays. A cousin twice removed of Robert Louis Stevenson, G. is one of the most powerful novelists of his time. See study by Marie-Beatrice Mesnet, 1954.

Greene, Maurice (1695-1755), organist and composer, b. London. He began his musical career as a chorister in St Paul's Cathedral, becoming in 1718 the cathedral organist. Nine years later he was appointed organist at the Chapel Royal, and in 1730 was elected to the chair of music at the univ. of Cambridge. He was the composer of a great deal of church music, and his best-known works are *Forty Select Anthems and Catches and Canons for Three or Four Voices*. He also wrote 2 oratorios, a *Te Deum* with orchestra, cantatas, songs, and 3 dramatic pastorals.

Greene, Nathaniel (1742-86), Amer. general, b. Potowomut in the township of Warwick, Rhode Is. He came of Quaker stock, and was not originally intended for the army, but in 1775, having been for a year in the militia, he was given the command of the Rhode Is. contingent of troops, and joined the Amer. forces at Cambridge. His able generalship won him Washington's confidence and his promotion was rapid. He took part in many successful engagements, distinguishing himself especially at Trenton and Princeton. In 1780 he was given the command of the S. army, which was opposed to a far superior force under Lord Cornwallis. His masterly strategy during the retreat from Catawba to the Dan was such that it enabled him not only to survive the 2 defeats of Guilford Court House (Mar. 1781) and Hobkirk Hill the following month, but eventually to win the victory of Eutaw Springs and drive the Brit. out of South Carolina. At the end of the campaign he was offered the post of secretary for war, but he refused, and in 1785 he settled on his Georgia estate, Mulberry Grove, where he d. the following year. See *Life of Nathaniel Greene*, by his grandson, George W. Greene (3 vols.), 1867-71, and biography (New York), 1893, by Brig.-Gen. F. V. Greene in the Great Commanders series.

Greene, Robert (1558-92), dramatist and pamphleteer, b. probably at Norwich. He went to St John's College, Cambridge, where he formed a friendship with Thomas Nashe (q.v.), and was later made a member of Oxford Univ. A Bohemian in his habits, he travelled in many European countries and then, having deserted his wife and child, settled in London, where he earned a precarious living as a freelance writer, alternating between bouts of dissipation and repentance. As a playwright he is included among the 'University Wits' who laid the foundations of Eng. drama. Those of his plays

which survive are, in probable order of composition, *Alphonsus King of Aragon* and *Orlando Furioso*, mouth-filling tragedies in the style of Marlowe; *Friar Bacon and Friar Bungay*, a comedy which introduces magic; and *The Scottish History of James the Fourth*, which is not, as one might imagine, a chronicle play, but a romantic comedy, with Oberon, king of the fairies, as one of its characters; he has also been credited with *George a Greene, the Pinner of Wakefield*, 1599. G. also wrote a number of prose romances, including *Guydonius*, the *Card of Fancy*, 1584; *Pandosto*, 1588, which gave Shakespeare the plot for *A Winter's Tale*; *Perimedes the Blacksmith*, 1588; *Menaiphon*, 1589, later reprinted as *Greene's Arcadia*; and *Philomela*, 1592. Some of these contain beautiful lyrical pieces, in which G. excelled.

In his pamphlets G. turned from Arcadia to Alsatia, and from idealism to sordid realism. They include *Euphues his Censure of Philautus*, 1587, a continuation of Lyly's work, which provoked Gabriel Harvey (q.v.) to sneer at G. as 'Euphues' Ape.' Others are *Greene's Mourning Garment*, 1590, *Never Too Late*, 1590, *Forewell to Folly*, 1591, *A Quip for an Upstart Courtier*, 1592, and the autobiographical *A Groatworth of Wit Bought with a Million of Repentance*, 1592, which contains the famous attack on Shakespeare as 'an upstart crow.' Interesting accounts of low London life and the swindlers that infested the city are contained in *A Notable Discovery of Cozenage*, 1591, *The Defence of Cony-Catching*, 1592, and *A Disputation between a He Cony-Catcher and a She Cony-Catcher*, 1592; 'cony,' it may be explained, was Elizabethan slang for a simpleton or 'mug.' G. is said to have d. from a surfeit of pickled herrings and Rhonish wine. There are eds. of the plays and poems by J. C. Collins, 1905, and of the complete plays by T. H. Dickinson, 1909; G.'s complete works were ed. by A. B. Grosart, 1881-6. See study by J. C. Jordan, 1915; and G. B. Harrison, *Shakespeare's Fellows*, 1923.

Greenfield, city of Massachusetts, U.S.A., and the cap. of Franklin co. It is situated near the R. Connecticut, 34 m. N. of Springfield. There are manufs. of machine parts, tools, and machinery, also a printing industry, dairying, and the cultivation of apples and potatoes. It is the E. terminus of the Mohawk Trail. Pop. 15,700.

Greenfinch, or **Green Linnet** (*Chloris*), common European bird, to be found also in parts of Asia and in New Zealand; it is also an occasional visitor to Palestine. It abounds in the Brit. Isles, having a preference for wooded dists. The cock is one of the brightest coloured of the common Brit. birds, its plumage being of a light yellowish-green, with the breast of yellow.

Greenfly, see APHIDES.

Greenford, see EALING.

Greengage, *Prunus insititia* v. *italica*, family Rosaceae; a kind of small round

plum, grown especially for desert. It is less hardy than some kinds, and requires shelter and a good deal of care in cultivation, which follows the same lines as those of the plum.

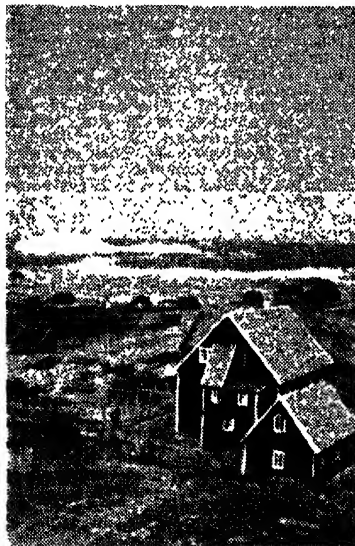
Greenheart, or **Bibiru**, or **Bibisi Tree**, the popular name given to the species of Lauraceae, *Ocotea rodacai*. It is a tree native to Brit. Guiana which yields a useful timber; the bark is employed for medicinal purposes. The term G. is also applied to *Calyptanthus chytranculia*, a species of Myrtaceae, and to *Colubrina ferruginea*, a species of Rhamnaceae.

Greenhithe, par. and vil. of NW. Kent, England, situated on the R. Thames, 2½ m. E. of Dartford, part of the urb. dist. of Swanscombe. There are chalk quarries and a large trade in cement and paper. Pop. 2260.

Greenhouse, see HOTHOUSE.

Greenland, is. continent belonging to Denmark, the larger part of which lies within the Arctic circle. It is bounded on the E. by the N. Atlantic and the Norwegian and G. seas, with the Denmark Strait dividing it from Iceland. On the W. Davis Strait and Baffin Bay separate G. from Baffin Land. Kap Farvel is the most southerly point, 59° 45' N. The length of G. is about 1650 m., and at the northerly part, where it is widest, the breadth is about 700 m. Its total area is about 850,000 sq. m., of which only about 50,000 are free from ice. The interior is covered with a vast ice sheet, which rises to 9000 ft and more, leaving only occasional isolated rocks (nunataks) uncovered. The ice sheet slopes gradually down to the coast, discharging icebergs, which float down the Atlantic and travel S. of Newfoundland. The Humboldt Glacier on the NW. coast is one of the largest in the world, having a breadth, where it reaches the sea, of 60 m. The coast is indented with deep fjords, and numerous small is. lie close to the land. Of these Disco is the largest, having an area of 3005 sq. m.; native iron is found here, also coal of a poor quality. Graphite is also mined. The only other mineral of any economic importance is cryolite, found and worked at Ivigtut in the Arsuk fjord on the SW. coast. The climate varies a great deal from bright sunshine to dense snow and fog; in the warmest month, July, the temp. is about 46° F., and in the coldest month, Jan., it may drop to -36° F. and below, while inland it may descend to -90° F. The climate on the E. coast is more severe than on the W.; ships find great difficulty in penetrating the pack ice which drifts down from the Arctic Ocean. The plant life of G. is of the Arctic tundra type. There are no forests; the dwarf willow and birch are the chief trees; flowering mosses flourish, and the yellow poppy, certain saxifrages, a heath, a rhododendron, an azalea, harebells, campions, and numerous other flowers blossom abundantly in some dists. during the 2 months of summer. Gardening is difficult, but in the S. a few vegetables are grown, chiefly radishes and turnips. The

chief wild animals are the white polar wolf, the polar bear, the polar fox, the Arctic hare; and the reindeer, although hunted to extinction in the S., still abounds in the more northerly dists. There are sev. varieties of birds, among them the eider-duck, guillemot, and the ptarmigan. The fisheries are very important, including cod, caplin, halibut, sea trout, etc. The whaling industry, though not as flourishing as formerly, still continues, and the sealing is very important. Narwhal and walruscs are also



L. W. Hutchinson

THE PARSONAGE, JACOBSHAVN

caught. Sheep are now raised in the SW. The pop. in 1953 numbered 25,302 (Europeans 1443; natives 23,859). The trade is mainly with Denmark, it being a monopoly of the Dan. crown since 1774, although a certain amount of free trade is now permitted. The prin. exports, which in 1953 amounted to 5,368,000 kroner, are chiefly fish (cod) and fishing products (4,035,000 kr.), plus seal and whale oil, fox, bear, and seal skins, and cryolite.

Since 1953 G. has been administratively a prov. of Denmark and sends 2 members (elected by universal suffrage) to the Dan. Parliament. In Copenhagen there is the 'Ministeriet for Grønland' whose departmental head is Eke Brun. The ministry appoints a governor who presides at the 'Landsraadet' or prov. council for the whole of G. Local councils are also

elected for each dist. Godthaab in the SW. is the cap., with a pop. of 2000, the largest in the country. A vigorous mixed race of Greenlanders has come of the intermarriage of Danes and Eskimo; the days of the turf hut or igloo, and of the kayak or umiak are mainly over except for the smaller communities, particularly the almost pure Eskimo of the E. (Angmagssalik and Scoresbysund) and Thule (q.v.). Much of the once primitive way of life, and especially housing, now approach Dan. standards. Motor-boats for fishing are used extensively since the change from an economy based on the seal to one based on cod-fishing, due to changes of climate and the warming of G. The wireless, and Dan. imports, prevent isolation; a weekly G. newspaper *Athua gagdlivutit Grønlandsposten* has been pub. since 1861. Education and Health Acts provide free schooling and benefits to all. Søndre Strømfjord is on the trans-polar air route from Copenhagen to Los Angeles. Even the forbidding ice-hemmed mts and glaciers of E. G. are gradually being mapped by the Dan. Ordnance Survey on a scale 1:50,000 and 1:250,000.

The hist. of G., as we know it, began in 982, when the Norwegian Eric the Red sailed from Iceland to find the country which one Gunnbjørn declared he had seen and stayed at. Eric discovered the country and called it G., hoping by this name to persuade people to colonise there; 2 colonies were formed, one called Østerbygd, in the dist. of Julianehaab, and another in the dist. of Godthaab. Remains of these Northmen and numerous ruins have been found. Christianity was introduced in AD 1000 by Leif Ericsson; the colonists built 12 churches and a monastery. For 4 centuries the Norse colony thrived, but by the beginning of the 15th cent. intercourse with the motherland, owing to increased Arctic ice and to epidemics and civil disturbances in Scandinavia, ceased entirely. The fate of the unfortunate colonists is unknown, but when in 1585 John Davis visited G., he found it to be inhabited only by Eskimo. It was recolonised early in the 18th cent. by Hans Egede. From 1261 to 1953 G. was a Dan. colony.

Sev. Arctic explorers have visited G. The first person to give a trustworthy account of the coast was Capt. Wm Scoresby in 1822. After this other expeditions of exploration were made by sev. nations, especially the Danes. Nansen, in 1888, travelled across a part of the ice sheet. In 1930-1 two exploration parties, one Eng. under Watkins and a Ger. one under Dr Wegener, wintered in G. Since then there have been many univ. and other expeditions, especially the Expéditions Polaires Françaises (1948-1953), the Brit. North Greenland expedition (1952-4), yearly geological and topographical survey expeditions led by Lange Koch, and sev. gov. sponsored U.S. expeditions, particularly from the U.S. air base of Thule. Denmark formally took control of Thule (pop. 300)

In 1937, for, although Denmark exercised suzerainty over the whole of G., the little settlement of Thule had been in a distinctive position since its discovery by Rasmussen, who set up there a sort of local gov. through a 'Council of Hunters.' The very extensive harbour of Færingehavn, 32 m. S. of the cap. of S. G., was opened up in the same year. By a defence agreement, signed on 9 April 1941, the U.S. Gov., in order to protect the *status quo* in the W. hemisphere, acquired the right to construct and operate landing fields, seaplane facilities, and radio and meteorological installations. The agreement explicitly recognises the sovereign rights of Denmark in G. See H. Egede, *Description of Greenland*, 1740; H. Itink, *Danish Greenland*, 1877; H. Mohn and



ESKIMO WOMEN

E.N.A.I.

F. Nansen, *The First Crossing of Greenland*, 1890; Knud Rasmussen, *Greenland by the Polar Sea*, 1921; M. Vahl, *Greenland*, 1928; I. N. Krabbe, *Greenland, its Nature, Inhabitants, and History*, 1930; V. Stefansson, *Greenland* (New York), 1942; K. Rodahl, *The Ice-capped Island*, 1946; P.-E. Victor, *Greenland*, 1949; G. Williamson, *Changing Greenland*, 1953; Danish Ministry for Foreign Affairs, *Greenland*, 1956; M. E. B. Banks, *High Arctic*, 1957; Commander C. J. W. Simpson, *North Ice*, 1957; and *Polar Record* (Jour.), 1931.

Greenland Sea, that part of the Arctic Ocean lying between Spitsbergen on the NE. and Greenland and Iceland on the S. and W. In places it is 1500 fathoms in depth, and its greatest width, between Spitsbergen and Greenland, is 500 m.

Greenlaw, mrlt tn and par. of S. Berwickshire, Scotland, formerly cap. of the co., on the Blackadder, 7 m. SW. of Duns. The 13th-cent. ruined castle of Hume is 3 m. S. Pop. 900.

Greenly Island, is. of Canada, situated in the strait of Belle Isle.

Greenock, municipal and police burgh and seaport tn in Renfrewshire, Scotland, on the S. bank of the Clyde, 22 m. by rail W. of Glasgow. The tn stretches along the water for nearly 4 m. and the harbour

works are extensive, including the Victoria and Albert harbours, the James Watt dock, and the Garvel graving dock. The tn possesses some fine public buildings, notably the municipal buildings, in It. Renaissance style; the co. buildings (1867); the custom house (1818) in classic style; the Watt Institution, founded in 1837, containing the public library (1783); and the Watt scientific library, founded by the inventor in 1816. There is a statue of James Watt by Sir Francis Chantrey. The Watt Engineering, Navigation, and Wireless Telegraphy School stands on the site of the inventor's bp. The N. par. church, dating from 1591, and re-erected at the Esplanade, contains windows by Wm Morris, Burne-Jones, and Rossetti. The churchyard was the burial place of Burns's 'Highland Mary,' who now lies in G. cemetery beneath her original memorial. The grave of John Galt, the novelist, is in the Inverkip Street burying ground. From 1940 until 1945 the Free Fr. naval base was at G. and there is a memorial, a prominent landmark from the estuary, to the men of the Free Fr. forces who gave their lives in the battle of the Atlantic. The chief industries are shipbuilding, marine engineering, sugar refining, rope spinning, cask and case making, manuf. of chemicals, worsted spinning, and knitting. G. has a tn council of 27 members, and returns 1 member to Parliament. Pop. 77,200.

Greenore, coastal vil. of co. Louth, Rep. of Ireland, situated on Carlingford Lough, with golf links. G. affords beautiful scenery, and has a raised beach, about 10 ft above sea-level. Pop. 300.

Greenough, George Bellas (1778-1855), Eng. geologist. He was one of those who founded the Geological Society of London, of which he was the first president. He pub., 1819, *A Critical Examination of the First Principles of Geology*, and the famous *Geological Map of England and Wales*, in 6 sheets, and, in 1854, a geological map of India.

Greenough, Horatio (1805-52), Amer. sculptor, b. Boston. He evinced a taste for art while still at Harvard, and designed the Bunker Hill monument. In 1825 he went to Rome and became a pupil of Thorwaldsen. The Amer. Gov. selected him to execute the colossal statue of Washington which was unveiled in 1843 in the city of that name, and later he executed a group representing the struggle between the Anglo-Saxon and Indian races, 'The Rescue.' The gallery of the Boston Athenaeum contains a bust of Lafayette by him, and the 'Medora' and 'Venus Victrix.' See H. T. Tuckerman, *Memoir of Horatio Greenough* (New York), 1853, and letters ed. by F. B. Greenough, 1887.

Greensand, a geological term, used to describe the lithology of iron-bearing sands coloured green by the presence of the mineral glauconite, and used as a stratigraphical term for the Cretaceous Lower and Upper G. The latter usage may be misleading as much of the G. lacks glauconite and is yellow, orange, or red.

The Lower G. is followed by the Gault (q.v.) Clays, above which comes the Upper G. followed by the Chalk. The Lower G. can be traced in England at intervals from the Isle of Wight, through Dorset and Oxon., to Lincs, but it largely centres on the Weald. The Upper G. in England is deposited on a V-shaped area from Kent and Sussex to Dorset, back to Norfolk, with a continuation in Lincs and Yorks. Many local names exist for G. In Surrey the deposit is known as freestone and hearthstone, in Hants as malmsstone. The scythstones and whetstones known as Devon bats come from the Upper G., while the concretions of carbonate of lime from the Lower are used in the manuf. of cement. Other products are glass sands and Fuller's earth. In the Weald important correlations exist between these deposits and local scenery, vil. sites, and industries.

Greensboro, city of North Carolina, U.S.A., situated in Guilford co., of which it is the cap. There are 5 colleges here, G. College for Women (1846), Bennett College, the State Agric. College, the Women's College of the univ. of North Carolina, and Immanuel Lutheran College. The surrounding country produces tobacco and fruit, and the tn is noted for its cotton-mills and blast furnaces. There are also lumber mills, terra-cotta works, and manufs. of machinery. Pop. 74,389.

Greensburg, city in the co. of Westmoreland, Pennsylvania, U.S.A., situated in the centre of a coal-mining dist. It is 25 m. ESE. of Pittsburgh. It manufs. bricks, clothing, glass, iron, and steel. Pop. 17,000.

Greenshank (*Tringa nebularia*), bird of greenish colour, which belongs to the sandpiper class. It is migratory, leaving Great Britain at the end of the July and reappearing at the end of April. It is found principally in the N. and W. of Scotland.

Greensted, vil. and par. of Essex, England, 5 m. E. of Epping, with an interesting church, in part pre-Norman, its nave being of split oak tree-trunks up-ended, with the curve on the outside. The body of St Edmund is said to have rested here on the journey to Bury St Edmunds (1013). Pop. 750.

Greenstone, name formerly used quite generally for weathered or metamorphosed basic igneous rocks, e.g. basalt, gabbro, diabase, etc., in which a development of chlorite or serpentine had caused them to become dark green. The term has now been replaced by more definite names dependent on actual analyses. See GREEN EARTH.

Greenville: 1. City and co. seat of Washington co., Mississippi, U.S.A., on the Mississippi R., 76 m. from Vicksburg. It is in the centre of a large cotton-producing region, and its industries are largely connected with that staple. Pop. 30,000.

2. City and co. seat of G. co., South Carolina, U.S.A., 95 m. NW. of Columbia. It is in the centre of an extensive cotton-growing and cotton-manufacturing dist.,

and its chief industry is therefore connected with that product, but it also has food-packing and processing plants, foundries, chemical and wood-working plants, and machine shops. It is the seat of Furman Univ. and Bob Jones Univ., and has an Air Force base. Pop. 58,160.

3. City and co. seat of Hunt co., Texas, U.S.A., about 50 m. NE. of Dallas. It is a trade centre for a rich agric. dist., and is also an important cotton market. Pop. 14,700.

Greenwell, Dora (1821-82), poetess, b. Greenwell Ford, Durham. Her writings, which have been compared with Christina Rossetti's (q.v.), are marked by intense religious feeling. Her books of verse include *Carmine Crucis*, 1869, and *Camera Obscura*, 1876. *The Pabience of Hope*, 1860, *Essays*, 1866, and *Colloquia Crucis*, 1871, are prose. See lives by C. M. Maynard, 1926, and H. Bett, 1950.

Greenwich, Baron, see PHILIP, PRINCE OF THE REALM AND DUKE OF EDINBURGH.

Greenwich: 1. Metropolitan and parl. bor. of SE. London, on the S. bank of the Thames, connected by 2 tunnels with the N. side. One is for pedestrians, and the other, Blackwall Tunnel, for vehicular traffic. The name G. means 'green dwelling' or 'green village.' In the Middle Ages it was a fishing vil. G. is celebrated for the Royal Naval College (see next article), the National Maritime Museum (q.v.), and for the Royal Observatory (see OBSERVATORY), the last being now transferred to Herstmonceux (q.v.) Castle, Sussex. The observatory is built on the point through which passes the first meridian. G. time, telegraphed each day to all parts of the U.K., is the standard time. The observatory stands in lat. 51° 21' 38" N. G. Park, originally a part of Blackheath (q.v.), was enclosed by Humphrey duke of Gloucester for his palace (see next article). The bor. returns 1 member to Parliament. Area 3858 ac.; pop. 90,600.

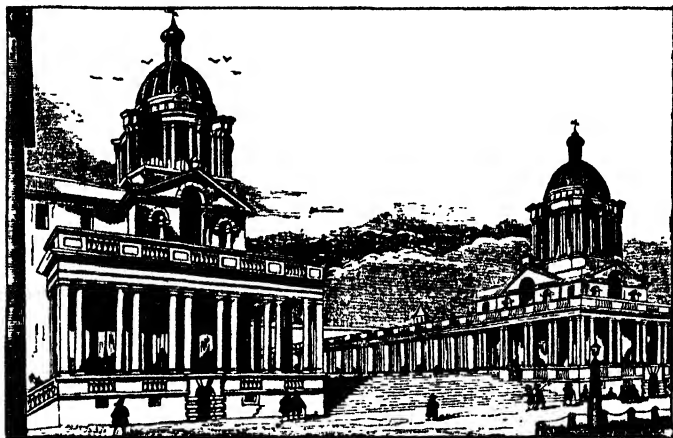
2. Amer. tn in Fairfield co., Connecticut, U.S.A., situated on Long Is. Sound, about 35 m. NE. of New York. It was settled in 1640, is a well-known residential area, manufs. vacuum cleaners, textiles, metal goods, marine engines, and furniture, and has printing and publishing concerns. Bruce Museum, Edgewood School, and Rosemary Hall school for girls are in G. Audubon Nature Centre, a wild-life sanctuary of 400 ac., was opened in 1943. Pop. 40,800.

Greenwich Hospital, still so called, though since 1873 it has been the Royal Naval College. It occupies the site of an ant. royal palace, which originated with the building, begun in 1428, of a palace by Humphrey duke of Gloucester, brother of Henry V, called Bella Court, but renamed Placentia when it came into the possession of Margaret of Anjou, queen of Henry VI. It was a favourite residence of Henry VII, and especially of Henry VIII; Mary I and Elizabeth I were b., and Edward VI d., there. During the Commonwealth the buildings were despoiled, being used for a time as a biscuit factory. Charles II

decided on a complete rebuilding, John Webb (son-in-law of Inigo Jones) being the architect, but of his plan only the E. portion of what is known as King Charles's building was completed before his death in 1672. Nothing much was done until William and Mary decided to give up residence and make it a sailors' hospital, when Wren was asked (1694) to prepare designs. The buildings as they stand now show in the main Wren's influence, but sev. more architects were employed over a long period before G. II. was finally completed in the reign of George IV. The range of buildings comprise 4 main blocks in 2 symmetrical groups on either side of a courtyard. The

Portsmouth in 1873. A building away from the main group is still used as a hospital, but most naval pensioners are boarded out.

Greenwich Royal Naval College, naval school estab. by the Admiralty for the purpose of giving special technical training to officers of the Brit. marine services. It occupies the greater part of the Royal Hospital at Greenwich. The college is open to students for the navy, the Royal Marines, the Indian Marines, and the Merchant Service, and all sides of naval education are cultivated. A course of naval construction is taken; the subalterns of the Royal Marines take this course here as part of their qualifying training.



GREENWICH HOSPITAL.

From an old engraving

2 S. blocks (surmounted by domes) are set closer to each other than the 2 N. blocks fronting the riv.; altogether they make an impressive panorama beautifully accented by colonnades of coupled columns. The famous Painted Hall in the King William building (SW. block) has a ceiling richly decorated with Sir James Thornhill's baroque paintings. There is a fine chapel, rebuilt 1779-88 by James Stuart and Wm Newton after Wren's chapel was destroyed by fire. It contains a large altar-piece painting by Benjamin West. Lying S. of the hospital, and facing G. Park, is the Queen's House, built by Inigo Jones for Anne of Denmark, James I's queen, and later enlarged for Henrietta Maria by John Webb. It contains many paintings of persons and events and persons in Eng. maritime hist.; in the adjacent modern wings is housed the National Maritime Museum (q.v.). Pensioners used G. H. from 1705 until 1869, when it was closed; the Royal Naval College was moved from

Greenwood, Frederick (1830-1909), journalist, b. London. He was successively editor of the *Cornhill Magazine*, the *Pall Mall Gazette*, the *St James's Gazette*, and the *Anti-Jacobin*. He had a strong political influence, and it was due to him that Britain bought Ismail Pasha's Suez Canal shares in 1875. His best books were *Margaret Denzil's History*, 1864, *The Lover's Locomotion*, 1893, and *Imagination in Dreams*, 1894.

Greenwood, Walter (1903-), novelist and playwright, b. Salford, Lancs. He left school at 12, and was successively office boy, stable boy, sign-writer, chauffeur, warehouseman, and salesman. In 1933 he pub. *Love on the Dole*, a novel based on his life experiences; it was dramatised and made the author famous as a proletarian novelist. Others of his books, which have usually an element of propaganda, are *The Time is Ripe*, 1934, *His Worship the Mayor*, 1934, *Standing Room Only*, 1936, *The Secret Kingdom*, 1938, *Only Mugs Work*, 1938, *Something in*

My Heart, 1944, and *What Everybody Wants*, 1954. *My Son's My Son*, 1935, *Give Us This Day*, 1936, *The Cure for Love*, 1945, and *So Brief the Spring*, 1945, are plays.

Greenwood: 1. Co. tn. of the co. of the same name in South Carolina, U.S.A., 65 m. WNW. of Columbia. It is a rail and road junction, and a manufacturing, trade, and shipping centre for an agric. area (cotton, truck produce, corn, fruits). There are textile and lumber mills, machine shops, foundries, food-processing plants, and printing works. G. is the seat of Lander College and Brewer Normal Institute (Negro). Pop. 13,800.

2. Cap. of Leflore co., Mississippi, U.S.A., about 90 m. NE. of Vicksburg. It manufs. cotton, drugs, furniture, and has saw-mills, canneries, and wood-working plants. Pop. 18,000.

Greenwood of Holbourne, Hamar Greenwood, 1st Viscount (1870-1948), Brit. statesman, b. Whithy, near Toronto, Canada, educ. at public schools at Whithy and at Toronto Univ. He settled in England in 1895, and was called to the Bar by Gray's Inn, of which he became a bencher (1917). In 1906 he entered Parliament as a Liberal. He was chief secretary for Ireland, 1920-2, the last to hold that office. In his efforts to restore order there he was responsible for many repressive measures. G. was essentially an imperialist, and in later years came to find that his sympathies lay with the Conservative party, and he sat for Walthamstow in the Conservative interest until 1929, when he was raised to the peerage. He was created a viscount, 1937.

Greer, Sir Ben (1857-1936), actor-manager, b. London, son of Capt. Wm G., R.N. Educ. at Royal Naval School, he became a schoolmaster and then an actor, joining a stock company at Southampton. First appearance in London was as Caius Lucius in *Cymbeline* at the Gaiety, 1883. He went into management in 1886 and revived the practice of giving Shakespeare's plays outdoors, and had sev. companies of 'Woodland Players.' In 1895 he produced a number of plays for the Shakespeare Festival at Stratford-on-Avon. From 1890 to 1902 he toured in America with his own company, which included H. B. Irving. Mrs. Patrick Campbell, Robert Loraine, Dorothea Baird, Sybil Thorndike, and Leon Quartermaine. He was engaged at the Old Vic from 1914 to 1918, during which time he produced many of Shakespeare's plays, including *Hamlet* in full. From 1924 to 1926 he collaborated with W. E. Stirling in producing plays in France and in establishing in Paris an Eng. theatre for the production of classics, 1925-7.

Greeland, see ELLAND.

Gregoire, Henri (1750-1831), Fr. politician and ecclesiastic, b. near Lunéville and educ. for the Church. He was a member of the States-General of 1789, and was one of the clergy who supported the revolution, while attempting to remain faithful to his religious beliefs. He was always a

fervent republican and Gallican, advocating the abolition of the monarchy, 1792, and later opposing the formation of Napoleon's Empire.

Gregor, William (1762-1817), Eng. scientist and clergyman, b. in Cornwall and educ. at Bristol and Cambridge Univs., where he became a fellow of St John's and entered holy orders. He was always an enthusiastic amateur scientist, and, though he preferred to settle in a remote vil. of Cornwall, he soon acquired a world-wide reputation as a metallurgical chemist through his analysis of such complex substances as topaz, uranium, mica, and wavelite. But it is for his discovery of titanium that his name is chiefly remembered. It was in a Cornish valley that he found a black sand, now known as 'ilmenite,' which had peculiar magnetic properties. Treating this with sulphuric acid G. obtained a yellow solution which, when heated with powdered charcoal, yielded a slag which contained titanium. G., however, did not isolate the pure metal, succumbing to tuberculosis before he could carry his investigations further.

Gregorian Calendar, see CALENDAR.

Gregorian Chant, see PLAINSONG.

Gregorio, Rosario (1753-1809), It. archaeologist, b. Palermo. He was educ. for the Church, took holy orders, and became prof. of theology at Palermo. He was commissioned by the king to superintend the opening of the tombs in his native city. He afterwards studied Arabic, and pub. in this tongue a hist. dealing with Sicily under the Arabs (this work was also issued in Lat.). In 1789 he was made prof. of public rights in Palermo Univ. His greatest work is *Considerazioni sulla storia della Sicilia dai tempi dei Normanni sino al presente*, 1806-16, but he also pub. many old chronicles.

Gregorovius, Ferdinand (1821-91), Ger. historian, b. Neidenburg and educ. at Königsberg. Subsequently he lived mostly in Italy, devoting himself to the study of It. hist. His *Geschichte der Stadt Rom im Mittelalter*, 1859-73, which has been trans. into Eng. and Italian, deals with the hist. of Rome from about 400 to the death of Pope Clement VII in 1534. His other works include *Geschichte des Kaisers Hadrian und seiner Zeit*, 1851. See J. Hönig, *Gregorovius als Dichter*, 1914, and *Gregorovius als Geschichtsschreiber*, 1921.

Gregory, St. of Tours (538-94), Frankish historian, b. at what is now Clermont-Ferrand in Auvergne. He is chiefly remembered as the author of *Historiarum sive Annalium Francorum libri X*, which covers a period from the creation of the world to the end of the 6th cent., and is of great value to the student of early European hist. See the ed. by H. Krusch and W. Levison, 1937-42. There is a trans. by O. M. Dalton, *History of the Franks*, 2 vols., 1927.

Gregory, name of 16 popes:

Gregory I, Saint (590-604), surnamed the Great, was b. in Rome about AD 540. He entered a monastery (c. 575), and

became one of the 7 regionary deacons of Rome. Pelagius II appointed him 'apocrisarius' at Constantinople (c. 579-c. 586), and on his return to Rome abbot of St Andrew's Monastery. On the death of Pelagius he was unanimously elected pope and consecrated 3 Sept. 590. He showed remarkable ability and wisdom in his administration of the Church. He sent Augustine to christianise Britain, reconciled Spain to the faith, and abolished simony among the clergy of Gaul. He regulated the services and ritual, and reformed and standardised the chant. His works, comprising many homilies and letters, are important sources for Church and profane hist. of the time, and are printed in J. P. Migne's *Patrologia Latina* (vols. lxxv-lxxix) and in folio (4 vols.), 1705; they include *Moralia*, *Regulae pastoralis liber*, and *Dialogorum liber*. See E. Fleury, *Hellénisme et christianisme: St Grégoire et son temps*, 1931; and studies by E. Kellet, 1889; J. Barmby, 1892; F. A. Gasquet, 1904; H. Grisar, 1904, 1928; F. H. Dudden, 1905; and Brechter, 1941.

Gregory II (715-31) was b. at Rome in 669. He sent Boniface as a missionary to Germany and did all in his power to promote Christianity among the heathen. By his conflict with Emperor Leo the Isaurian concerning sacred images, as well as on the question of heavy taxation, he greatly increased the political power of the Holy See.

Gregory III (731-41) was b. in Syria. He excommunicated the Iconoclasts; he was unsuccessful in his attempt to obtain the help of Charles Martel against the Lombards.

Gregory IV (827-44) recognised the supremacy of the Frankish emperor, and sided with Lothair in his quarrel with Louis the Pious. He ordered the universal observance of the feast of All Saints.

Gregory V (986-9). During his pontificate John XVI was set up as an anti-pope (986-7).

Gregory VI (1045-6) bought the pontificate from his godson Benedict IX, and was deposed on a charge of simony in the following year. Hildebrand (afterwards G. VII) accompanied him to Germany, where he d. in 1047.

Gregory VII, Saint (1073-85), formerly Hildebrand, was b. at Soana, in Tuscany, about 1021, and was educ. in the monastery of St Maria, on the Aventine, and afterwards at Cluny. He accompanied Leo IX to Rome (1049), and entered holy orders. He succeeded Alexander II as pope, and laboured to remedy the evils that existed within the Church. He aroused the imperial displeasure for prohibiting the abuse of investiture, and was formally deposed by Henry IV in 1076, whereupon G. inflicted a sentence of excommunication and ultimately made him submit to a humiliating penance at Canossa in 1077. In 1080 Henry again deposed G., proclaimed in his place the anti-pope Clement III, and laid siege to Rome (1081-4). G. was relieved by Robert Guiscard, and withdrew to Salerno,

where he d. Canonised in 1728. See studies by J. W. Bowden, 1846; W. Stephens, 1886; P. E. Villemain (Eng. trans.), 1873; A. Vincent, 1896; A. Mathew, 1910; and A. J. Macdonald, 1932.

Gregory VIII (Alberto de Mora, 21 Oct. to 17 Dec. 1187) was b. in Benevento. He made peace with Henry VI and reconciled the Pisans and the Genoese. He d. at Pisa while inaugurating a new crusade to recover Jerusalem.

Gregory IX, Ugolino dei Segni (1227-1241), was b. of noble family at Anagni, and studied at Paris and Bologna. He excommunicated Frederick II for refusing to take part in the crusades, absolved him in 1230, but again excommunicated him in 1239. The emperor marched on Rome (1241), but G. d. before the siege began. He made rules for the punishment of heretics and systematised the Inquisition. See his letters in *Monumenta Germaniae historica*, 1883, and studies by P. Balan, 1872-3; J. Felton, 1886; and L. Zarncke, 1930.

Gregory X, Tebaldo Visconti (1271-6), was b. at Piacenza in 1208. During his pontificate a temporary union was brought about between the Gk and Rom. Churches, and the constitution of the conclave was determined upon (1274).

Gregory XI, Pierre Roger (1370-8), was b. at Limousin in 1330. He reformed the monastic orders, tried to make peace between England and France, and at the earnest entreaty of St Catherine of Siena transferred the papal see from Avignon back to Italy (1377).

Gregory XII, Angelo Cornaro (1406-15), was b. of noble family at Venice about 1327. He opened negotiations with the anti-pope, Benedict XIII (1408), but on his creation of new cardinals, his former cardinals left him, and both popes were deposed (1409) in favour of Alexander V. G. retaliated by branding Benedict and Alexander as schismatical, but was banished from Naples in 1411 and sent in his resignation to the Council of Constance (1415). He became cardinal-bishop of Porto, and d. at Recanati in 1417.

Gregory XIII, Ugo Buoncompagni (1572-85), was b. at Bologna in 1502. He took part in the Council of Trent (1562-3). He denounced heresy, helped the Irish against Elizabeth, subsidised Philip II in his wars against the Netherlands, and supported the Catholic League in France. He promoted the work of the Jesuits, and estab. the Collegium Germanicum in Rome. On 24 Feb. 1582 he brought about the reform of the calendar.

Gregory XIV, Nicolo Sfondrato (1590-1), was b. at Cremona in 1535. He was under the influence of Philip II, and excommunicated Henry of Navarre.

Gregory XV, Alessandro Ludovisi (1621-1623), was b. at Bologna. He founded the Congregation of Propaganda, and helped Ferdinand II in the Thirty Years War.

Gregory XVI, Bartolommo Cappellari (1831-46), was b. at Belluno in 1765. He entered the order of the Camaldolese, and later was sent to Rome and created cardinal. He was a great patron of

learning and spent money lavishly on architecture. He wrote *Il Trionfo della Santa Bede*, 1799. See life by Sylvain, 1889; also N. Wiseman, *Recollections of the Last Four Popes*, 1858; and F. Nielsen, *History of the Papacy in the Nineteenth Century*, 1906.

See L. Ranke, *History of the Popes*, 1879; L. Pastor, *History of the Popes* (Eng. trans.), 1899; M. Creighton, *History of the Papacy*, 1899; and H. K. Mann, *Lives of the Popes*, 1902-10.

See also POPES, LIST OF THE.

Gregory, name of a Scottish family distinguished in mathematics and medicine:

James Gregory (1638-75), b. in Drumoak, Aberdeenshire, and educ. at the grammar school and Marischal College of that city. He invented the Gregorian reflecting telescope, described in his *Optica Promota*, 1663. While studying at Padua Univ. he pub. *Vera circuli et hyperbolae quadratura*, 1667, *Geometriae Pars Universalis*, 1668, and *Exercitationes Geometricae*, 1668. He was elected F.R.S. in 1668, and prof. of mathematics at St Andrews (1669) and Edinburgh (1674).

David Gregory (1661-1708), nephew of above, b. in Aberdeen. He was appointed prof. of mathematics at Edinburgh (1683-1691), and Savilian prof. of astronomy at Oxford (1691-1708). He was a friend and admirer of Newton. Chief pubs.: *Exercitatio Geometrica de Dimensione Figurarum*, 1684, *Astronomiae Physicae et Geometricae Elementa*, 1702, and an ed. of Euclid, 1703.

John Gregory (1724-73), grandson of James G., b. at Aberdeen. He studied medicine at Edinburgh and Leyden, becoming prof. of philosophy (1746-9) and medicine (1755-64) at Aberdeen, and of medicine at Edinburgh (1766-73). His works include *Elements of the Practice of Physic*, 1772, and *Lectures on the Duties and Qualifications of a Physician*, 1772; his collected works were ed. by Tytler, 1788.

James Gregory (1753-1821), son of John G. and a native of Aberdeen. After studying at Edinburgh, Oxford, and Leyden he became prof. of the institutes of medicine (i.e. physiology) at Edinburgh (1776-89) and then prof. of the practice of medicine (1790-1821). He is famous for 'Gregory's powder,' a mixture of rhubarb, magnesia, and ginger. He wrote *Consectus medicinae theoreticae*, 1788, and *Literary and Philosophical Essays* (2 vols.), 1792.

Duncan Farquharson Gregory (1813-44), mathematician, youngest son of James G. (1753-1821) (q.v.). He was the first editor of the *Cambridge Mathematical Journal*, and his *Mathematical Writings* were ed. by W. Walton, 1865.

Gregory, Isabella Augusta, Lady (1852-1932), playwright, b. Roxburghe, co. Galway, a daughter of Dudley Perse. In 1880 she married Sir Wm Henry G., a former M.P. for Dublin city and co. Galway. In the last years of the 19th cent. she was foremost in founding a national drama in Ireland, and in 1904

she obtained a patent for the Abbey Theatre—the present home of that drama. She wrote many one-act plays, including *The Workhouse Ward*, *The Gaol Gate*, *The White Cockade*, and *Dave*. She rendered Irish sagas into the Irish dialect of Eng. and also made adaptations from Molière. She did much to preserve Irish folk-lore. With Yeats and Synge she was one of the leading figures of the older generation of dramatists in the modern Irish theatre. In 1916 she began to incorporate her records, diaries, and personal memoranda into a series of private journals, which eventually reached a total of 42 type-written vols., pub. as *Lady Gregory's Journals*, 1916-1930, 1946, and ed. by Lennox Robinson. It is an informed commentary by one who possessed an original creative genius of her own and a flair for detecting and encouraging genius in others.

Gregory, Sir Richard Arman (1864-1952), astronomer and scientist, b. Bristol, educ. at an elementary school, and later studied at the Royal College of Science. Here he met H. G. Wells, with whom he was associated until Wells's death in 1946. He was editor of *Nature* from 1919 to 1939, and was elected to the Royal Society in 1933. In 1893 he was joint author, with H. G. Wells, of *Honours Physiography*. Other works include *The Vault of Heaven*, 1893, *Religion in Science and Civilisation*, 1940, *Gods and Men*, 1949, and *Science in Chains*, 1941.

Gregory, Lake, large salt lake in South Australia, E. of Lake Eyre.

Gregory of Nazianzus, St (329-90), doctor of the Church, b. Arianzus near Nazianzus, Cappadocia, where his father was bishop and ordained him priest. Appointed bishop of Sasima by St Basil, as a protest against the interference of the Emperor Valens in eccles. affairs, G. did not reside there long, but took up in 379 the task of reconciling Constantinople, then pro-Arian, to the Nicene faith. At the Council of Constantinople he was expelled as belonging to another diocese. His work had been accomplished, and he retired to Nazianzus where he d. He left many poems, orations, and epistles. With Basil and Gregory of Nyssa, he is called one of the Cappadocian Fathers. See *Nicene and Ante-Nicene Fathers* (select works trans.), vol. 7; E. Leigh-Bennett, *Handbook of the Early Christian Fathers*, 1920.

Gregory of Nyssa, St (c. 331-after 394), younger brother of St Basil, speculative theologian and Neo-Platonist. He, Basil, and Gregory of Nazianzus are the 3 great Cappadocian Fathers. See Migne, *Patrologia Graeca*, xxv-xxviii (new ed. 1855-1861); E. Leigh-Bennett, *Handbook of the Early Christian Fathers*, 1920; study by E. Fleury, 1930.

Gregory Thaumaturgus, St (c. 210-70), b. Neocaesarea, in Pontus; a disciple of Origen (q.v.); consecrated bishop of Neocaesarea in 240. For his treatises, including a *Confession of Faith*, and a *Panegyric on Origen*, see A. Galland, *Bibliotheca graeco-latina veterum Patrum*.

III, and ed. of J. A. Bengel, 1722. See also V. Ryssel, *Gregorius Thaumaturgus*, 1880.

Gregory the Illuminator, St (c. 240-322), apostle of Armenia, brought up as a Christian at Caesarea in Cappadocia. About 286, while doing mission work in Armenia, he was thrown into a pit where he was kept for 14 years, but on healing King Terdat of an affliction he was released and became head of the Armenian Church, which fl. under his care. He d. in a cave about 322. His feast is on 30 Sept.

Greif, Martin (1839-1911), pseudonym of Friedrich Hermann Frey, Ger. poet and dramatist. He was b. at Speyer and educ. at Munich. His lyrics, which are beautiful and full of noble sentiment, are collected in *Gedichte*, 1868, and *Neue Lieder und Märchen*, 1902. His dramatic pieces include *Nero*, 1877, *Konradin*, 1888, *Agnes Bernauer*, 1894, *General York*, 1899, and *Schiller's Demetrius*, 1901. See W. Kosch, *Martin Greif* (3rd ed.) 1941.

Greifenberg, see GRYFINE.

Greifenhagen, see GRYFINO.

Greifswald, Ger. tn in the dist. of Rostock, on the R. Ryck near its mouth on the Greifswalder Bodden Bay of the Baltic Sea, 52 m. E. of Rostock (q.v.). It once belonged to the Hanseatic League (q.v.). In 1648 it passed to Sweden, and in 1815 to Prussia. There is a 13th-cent. church, and there are fine old houses. G. is the seat of a Lutheran bishop. Its univ. dates from 1456. The chief industries are fish preserving and the manuf. of machinery and chemicals. Pop. 43,000.

Greisen, substance resembling pale granite, from which it differs by the absence of feldspar and biotite. It consists essentially of quartz and muscovite, the latter, which has a pearly lustre, giving it a silvery appearance. Accessory minerals are topaz, fluor spar, apatite, etc. Containing small amounts of tin oxide, it is worked as a source of this metal in Cornwall, Saxony, and Tasmania.

Greiz, Ger. tn in the dist. of Gera, on the White Elster (q.v.) at the mouth of the Göltzsch, 16 m. S. by E. of Gera (q.v.). Until 1918 it was the cap. of one of the Reuss (q.v.) principalities, and it has 2 palaces. Textiles and chemicals are manufactured. Pop. 45,000.

Grekov, Boris Dmitriyevich (1882-1953), Russian historian, pupil of Klyuchevskiy (q.v.). His chief field of research was medieval Russian hist. *Kievan Russia*, 1939, *Peasants in Russia from the Earliest Times to the Seventeenth Century*, 1946, *The Golden Horde and its Fall*, 1950. From the middle of the 1930's G.'s National Bolshevik (see NATIONAL BOL-SHEVISM) school of historiography replaced Pokrovskiy's school as the officially recognised one. See STALINISM; ZHDANOV.

Gremlin is the name given in the R. A. F. to a race of malevolent gnomes or pixies who are blamed for unforeseen mishaps. A most interesting example of modern folklore, the term is of doubtful origin. According to one story, it arose from a

spoonerism made by an officer when opening a bottle of Fremlin's ale. The cork shot out unexpectedly and, intending to say 'A goblin has jumped out of my Fremlin's,' he exclaimed 'A gremlin has jumped out of my Foblin's.' Alternatively, the word has been derived from Irish *gruaimin*, meaning surly little man, plus confusion with *goblin*. Some connection with 'goblin' seems reasonably certain. According to the best authorities gromlins are about a foot tall; they sit on the wings of aircraft and make faces at the crew, thus impaling the concentration of learners in particular. There are sev. types: *spanjers* are found only above a height of 20,000 ft; *whiz-zucks* haunt the outskirts of enemy airfields; and there are office G.s who hide all the paper-clips and drawing-pins just when they are wanted. All owe allegiance to the *Grand Walloper*, or king of the G.s, who directs their operations. See C. H. Ward-Jackson, *It's a Piece of Cake*, and J. L. Hunt and A. G. Pringle, *Service Slang*, 1943.

Grenada, is. of the West Indies which belongs to Great Britain, situated at the southernmost point of the Caribbees. It is 21 m. in length and about 12 m. in breadth, and has an area of 133 sq. m. The is. is volcanic, having many craters, the highest of which is St Catherine, which is about 2750 ft. The climate of G. is equable and healthy; rainfall in average years varies from 60 to 150 in. The maximum mean temp. is 90° F., and the minimum 68°, but in the mts it falls below 60°. The cap. of the is. is St George's (pop. 6000), situated on a very fine harbour. It was estab. by the Fr. in 1705, when it was called Fort Royal; it received its present name during the administration of Governor Robert Melville (1764-71) when an ordinance was passed substituting Eng. for Fr. names. In St George's Church, which was built soon after 1763, are tablets erected in 1799 to the memory of the victims of the Brigands' war (see below). Gov. House stands on rising ground overlooking the tn and harbour. It was built in 1802-7 and modernised in 1887 and 1902. A favourite excursion from St George's is the drive to the Grand Etang, a fresh-water lake 2½ m. in circumference and 1740 ft above sea-level, occupying the crater of an extinct volcano. Other tns are Grenville on the E. of the is. and Gouyave on the W. Columbus discovered G. in 1498 on his third voyage, when he was hastening back to his colony on Española after finding and naming Trinidad. Some say that he named the is. Ascension, others that he named it Conception; no one knows when it received its present name. The Spaniards left it alone, partly because there was no gold there and partly on account of the Caribs. In 1651 du Parquet, Fr. governor of Martinico (Martinique), attracted by the fertility of the is., tried to induce the Caribs to part with the is. by presents of knives, hatchets, and brandy, but in vain. He thereupon

erected a fort, fighting broke out, and the Caribs were soon reduced to less than a hundred, the last fugitives being driven to a rock overhanging the sea whence they leapt to their death. This spot, Le Morne des Sauteurs, is on the N. coast and retains its name to-day. A few years later du Parquet sold the is. to the Comte de Cerillac for about £2000, who installed as his governor a man whose oppression resulted in his being tried and shot on the top of the hill on the Grand Etang road. Cerillac in his turn sold the is., and for the next 10 years, 1664-74, it was owned by the Fr. West Indian Company, and then devolved on the Crown. The Eng. seized it in 1762, at the time of Rodney's first cruise in the West Indies, but the Fr. recaptured it in 1779. Three years later Rodney's great victory over de Grasse (see SAINTS, BATTLE OF THE) recovered the is., and it has been in Brit. hands ever since. One of the prin. events in the hist. of G. is the Brigrands' war in 1795. This was really a rebellion, instigated by the revolutionary fanatic, Victor Hugues of Martinique, and was the last Fr. attempt to recover the is. The rebels, led by Julien Fédon and inflamed by Fr. revolutionary doctrine, committed great excesses, among which was the massacre of Lt.-Governor Home and some 48 Brit. subjects. The rising was suppressed in 1796, the Royal Black Rangers showing great gallantry against odds in the investment of the rebel camp on Port Royal Hill. In 1766, when the 4 is., G., Dominica, St Vincent, and Tobago, were formed into the gov. of G., a general council was set up for them by the first governor. Later the other is. became separate colonies from G., while Tobago was ceded to France. There was another period in which the is., though retaining its own legislature, came under the authority of the governor-in-chief of Barbados. But in 1885 G., St Vincent, St Lucia, and Tobago were grouped together as the Windward Is., and the situation to-day is that there is one governor in common for the is. constituting the Windwards (now G. and the Grenadines, St Lucia, St Vincent, and Dominica), who resides in G. G. was under the old colonial representative form of gov. from 1766 to 1875. The massive and highly prized 45-lb. silver mace appeared on the table of the House of Assembly for over a century, but in 1876, when G. was proclaimed a crown colony, the mace was taken away and only reappeared in 1931 when the new legislative council with elected members was opened. Much of the cultivation is of tree crops; sugar and rum were formerly the chief industries, but now not enough sugar even for local needs is produced. The chief exports are cocoa, nutmegs, mace, raw cotton, and lime oil. A serious hurricane caused heavy damage to trees in Sept. 1955. There are elementary and secondary schools. Carriacou, the largest of the Grenadines, is attached to G. for administrative purposes. Pop. (estimated 1954) 85,300.

See D. G. Garraway, *The Insurrection, 1795-6, 1877*, and *The Grenada Handbook and Directory* (ann.).

Grenade, ball of iron which is made hollow and filled with explosive material. By means of a lighted fuse the ball is exploded. Hand-G.s were at one time carried by soldiers and thrown amongst the enemy, hence the term grenadiers. G.s played an important part in the Jap. attacks on the trenches at Port Arthur in 1904. Both Germany and Great Britain had adopted G.s just before the outbreak of the First World War; the former had a rifle G. and the latter a 'stick' G., both exploding on impact. Germany, however, was well supplied, whereas Great Britain, in common with her allies, was forced to improvise G.s from condensed milk tins and similar receptacles. Many varieties were invented during the First World War, the best known on the Allies' side being the Mills (see also BOMB). This was fitted with a time fuse connected with a lever held in position by the hand and made to operate only when the G. had been thrown. This pattern was modified for use as a rifle G. Nearly every pattern had a cast-iron segmented body which split up when the G. exploded.

Grenadier, originally a soldier trained to throw hand-grenades, who had to be distinguished by his height and strength. Subsequently the word was applied to a member of the first company of a battalion. The G. Guards (q.v.) take their name from the G.s of the Imperial Guard whom they defeated at Waterloo.

Grenadier Guards rank first in order of precedence among the infantry regiments of the Brit. Army. They originated in a regiment of royalist refugees raised for Charles II in Flanders in 1656 and brought back to England in 1665. In that year this regiment and another regiment of royal guards were amalgamated. The G. G. fought at Namur in 1695; at the siege of Gibraltar, 1704-5; in all Marlborough's great battles; at Dettingen, Egmont-on-Sea; with Moore at Corunna and with Wellington in the Peninsula and at Waterloo, where they distinguished themselves in action against the Grenadiers of the Imperial Guard. In recognition of their services at this last battle they were given their Grenadier title in 1815. In the Crimean war they were at Alma, Inkerman, and Sevastopol; in Egypt at Tel-el-Kobir and Suakin and at Khartoum; and in the South African war with Methuen at Modder R. On the outbreak of the First World War the 2nd Battalion of the G. G. joined Gen. Sir John French's 'Contemptible Little Army' and took part in the famous retreat from Mons and the battles of the Aisne and the Marne. At the end of Oct. 1914 it defeated the renowned Prussian Guard in their many efforts to break the Brit. line and reach the channel ports. The 1st Battalion landed at Zeebrugge on 7 Oct. 1914 and took up a position in the Ypres sector. In Mar. 1915 it distinguished itself at the battle of Neuve Chapelle. The 3rd Battalion went overseas

in Aug. 1915, and the 4th Battalion joined it later in the year. In the summer of 1915 the battalions of Foot Guards at the front were formed into a Guards Div. under the command of Lord Cavan. In the 1916 battle of the Somme the 1st Battalion made a great name for itself by its gallant conduct at the action at Les Boeufs. The prin. operation in which the G. G. took part in 1917 was the breaking up of the Ger. offensives in July and Aug. on the Yser Canal. The successes gained here drew a message of admiration and praise from the king. In Nov. they moved further S. and took part in the attack against Cambrai (q.v.) in which the 4th Battalion earned the special thanks of the G.O.C. 40th Div. for advancing to his support at Bourlon Wood (q.v.) across the open, which was under heavy shell fire. From Jan. to Mar. 1918 the G. G. were in the Arras sector (see ARRAS, BATTLE OF) and felt the full force of the great Ger. breakthrough. By the time the Allies' counter offensive was launched in Aug. all battalions had been reorganised and re-equipped. In this offensive the 1st Battalion gained further laurels by the capture of St Leger and at the crossing of the Canal du Nord. In the latter operation Viscount Gort was twice wounded, his gallant conduct winning for him the V.C. After the armistice the Guards Div. formed part of the Army of Occupation in Germany. In the Second World War the G. G. fought on the W. front and as part of the Eighth Army (q.v.) in North Africa and Italy. They were equally conspicuous in the battle of Flanders and at Dunkirk (1940), where their former leader, Viscount Gort (q.v.), was now commander-in-chief. On the It. front the G. G. were in action all through the bitter fighting of the autumn of 1943 up to the battles on Monte Cassino, and in 1944 they were at the Anzio beachhead. As part of the Brit. Guards Armoured Div. the G. G. were in the heavy fighting in the Nijmegen area in 1944 and in many of the battles of the 21st Army Group both W. and E. of the Rhine in 1945. The G. G. celebrated its tercentenary in 1956. See P. Forbes and N. Nicolson, *The Grenadier Guards in the War 1939-45*, 1949.

Grenadines, chain of small is. belonging to the West Indies, in the Windward group. They extend between St Vincent and Grenada for 60 m., and are of volcanic origin. Carriacou, Union, Cannouan, and Begula are the largest, and they yield coffee, cotton, sugar, and indigo. Pop. 7500. See also GRENADA; ST VINCENT.

Grenelle, SW. suburb of Paris (q.v.), France, on the l. b. of the Seine, and included in the 15th arron. It has a famous artesian well, 1704 ft deep.

Grenfell, Bernard Pyne (1869-1926), papyrologist, b. Birmingham; educ. at Clifton College, and at Queen's College, Oxford. In 1894 he began excavations in Egypt, and, in collaboration with A. S. Hunt, pub. his important discoveries of anct papyri, including *Sayings of our Lord*

and *New Sayings of Jesus*. From 1916 prof. of papyrology at Oxford Univ. His pubs. include *The Revenue Laws of Ptolemy Philadelphus*, 1896, *An Alexandrian Erotic Fragment*, 1896, and, in conjunction with A. S. Hunt, *The Geneva Fragment of Menander*, 1898, *The Oxyrhynchus Papyri*, 1898-1924, *The Amherst Papyri*, 1900-1, *The Tebtunis Papyri*, 1902, and *The Hibel Papyri*, 1906.

Grenfell, Francis Wallace, Baron (1841-1925), general, b. London. He was educ. at Blandford, and entered the army in 1869, attaining the rank of captain in 1871. He served in the Kafir war, 1878, and in the Zulu war, 1879. During the war in the Transvaal, 1881-2, he served as assistant quartermaster-general under Sir Evelyn Wood. He distinguished himself in the Egyptian war, fighting at Tel-el-Kehir in 1882. He took part in the Nile Expedition, 1884; and was sirdar of the Egyptian Army, 1885-92. He commanded the operations at Suakin, 1888, and won the battle of Toski, 1889. From 1894 to 1897 he was at the War Office as inspector-general of auxiliary forces. In the latter year he again took command in Egypt, and he was commander-in-chief and governor-general of Malta, 1899-1903. He commanded the 4th Army Corps, 1903-4, and the forces in Ireland, 1904-8. He was created 1st Baron G. of Kilvey in 1902, and made field marshal in 1908.

Grenfell, George (1849-1906), Eng. explorer and missionary, b. Lanced, Cornwall. In 1874 he went to the Cameroons under the Baptist Missionary Society, and explored the country. Four years later he went with Comber to the Congo to make an extensive survey, and in 1885 explored the Ubangi R. During 1891-2 he served on a commission as a delegate of the Congo Free State to determine the boundary line between that country and the Portuguese ter. See Sir H. Johnston, *George Grenfell and the Congo*, 1908, and G. Hawker, *Life of George Grenfell*, 1909.

Grenfell, Julian Henry Francis (1888-1915), soldier and poet, b. London, eldest son of 1st Baron Desborough. He was educ. at Eton and Balliol College, Oxford. He passed, 1910, into the army, first of all univ. candidates, and went to India to join the 1st Dragoons, with which he went to South Africa, 1911. He served in Flanders in First World War, was twice mentioned in dispatches, and received the D.S.O. He was fatally wounded on the Menin Road. He was over 6 ft tall, full of enthusiasm and high ideals, which embraced religion and a love of war. In the year of his death he had written the sounding poem 'Into Battle.' See T. Sturge Moore, *Some Soldier Poets*, 1919.

Grenfell, Sir Wilfred Thomason (1865-1940) ('Grenfell of Labrador'), Brit. medical missionary, whose name is inseparably associated with the development and well-being of Labrador, a desolate and barren country where disease was rife and living precarious. B. Parkgate, Cheshire; educ. at Marlborough and Oxford; studied medicine at the London

Hospital, being house surgeon to Sir Frederick Treves. First visit to Labrador began with a cruise as medical missionary with the Royal National Mission for Deep Sea Fishermen, and in 1892 he went to Labrador as permanent medical missionary. His valuable pioneering work there greatly improved the lot of the local fishermen. His schemes for the development of Labrador grew far beyond the means of the mission, so he organised lecturing tours in Britain, Canada, and the U.S.A., until eventually, largely with Amer. support, the International G. Association was founded with an endowment of over £200,000. He built hospitals, nursing stations, orphanages, schools, and stores in Labrador. He owned and operated steamships and yaws in connection with his various hospitals, and was himself surgeon-in-chief and master of a hospital steamship which cruised the coasts of Labrador. In 1912 he opened the King George V Seamen's Institute, the foundation stone of which was laid by the king by electric message from England. In the First World War he was with the Harvard surgical unit in France. Essentially of the pioneering temperament, the effectiveness of his work was enhanced by an attractive and strongly individual personality. G. spoke and wrote most eloquently of the attractions of Labrador. Among his numerous works are *Vikings of To-day*, 1895; *The Harvest of the Sea*, 1905; *Labrador: the Country and its People*, 1909, new ed. 1922; *Autobiography of a Labrador Doctor*, 1919; *Labrador Looks at the Orient*, 1928; and *The Romance of Labrador*, 1934. In 1920 he was awarded the gold medal of the National Academy of Social Science of America, and in 1930 the Livingstone gold medal of the Royal Scottish Geographical Society. See J. B. Mathews, *Wilfred Grenfell: Master Mariner*, 1924; and F. L. Waldo, *Grenfell: Knight-errant of the North*, 1924.

Grenfell, William Henry, 1st Baron Desborough of Taplow (1855-1945), Brit. politician and sportsman, educ. at Harrow and Balliol College, Oxford. G. was a great all-round athlete at school and at the univ.; he also twice swam Niagara. He represented Salisbury as a Liberal in the Parliaments of 1880 and 1885. He was returned as M.P. for Hereford in 1892, but resigned, and later represented the Wycombe div. of Buckinghamshire in the Conservative interest. He was made a peer in 1905. G. was a member of the Tariff Commission of 1904, and was chairman of committees on policy, and on freshwater fish, and of the Thames Conservancy Board. He was father of Julian G., the poet. He became president of the Lawn Tennis Association, and of the M.C.C.

Grenoble (anct Gratianopolis), Fr. city, cap. of the dept of Isère, on the Isère and the Drac, 346 m. SE. of Paris. It was made a tn by Gratian (q.v.), was the cap. of the Dauphiné (q.v.), and passed to France in 1341. It is the chief tourist

centre of the Fr. Alps, and has a cathedral (12th-13th cents.), a Renaissance palace of the Dauphins (now a court), and fine galleries and museums. The 13th-15th cents. church of St-André contains the tomb of Bayard (q.v.). The univ. was founded in 1339. G. has long been famous for its gloves; it has also metallurgical, textile, cement, foodstuff, and paper industries. Hydroelectric power has been developed on a large scale. Stendhal, Fantin-Latour, and Barnave (qq.v.) were natives. Pop. 116,450.

Grenville, George (1712-70), Eng. statesman, educ. at Eton and Christ Church, Oxford. He sat in Parliament as member for Buckingham from 1740 till his death. After having held various offices he became secretary of state, 1762; first lord of the admiralty, 1762-3; chancellor of the exchequer, first lord of the treasury, and Prime Minister, 1763-5. His ministry is remembered for the prosecution of Wilkes and the passing of the Amer. Stamp Act, 1765. See *The Grenville Papers*, 1852-3.

Grenville, Richard, see TEMPLE.

Grenville, or Greynville, Sir Richard (c. 1541-91), seaman, of an anct Cornish family. He commanded Raleigh's expedition to Virginia in 1585-6, and was in command of the *Revenge* in the fight with the Sp. fleet off Flores in the Azores, and d. on board the enemy's flag-ship, *San Pablo*. See Sir Walter Raleigh, *The Truth of the Fight about the Isles of Azores*, 1591; G. Markham, *The Most Honourable Tragedie of Sir Richard Grinville, Knight*, 1595; J. Proude's essay in *Short Studies on Great Subjects*, 1807; Tennyson's ballad, *The Revenge*; and A. L. Rowse, *Sir Richard Grenville*, 1949.

Grenville, Richard Plantagenet, see BUCKINGHAM AND CHANDOS.

Grenville, William Wyndham, 1st Baron (1759-1834), Eng. statesman, son of George G. He was educ. at Eton and Christ Church, Oxford, and entered Parliament as member for Buckingham in 1782. He became secretary to his brother Earl Temple, then lord-lieutenant of Ireland, and paymaster-general of the army under his cousin, Wm Pitt. He was appointed in succession Speaker of the House of Commons (1789); secretary of state for the home dept (1789); and foreign secretary (1791). Pitt and his colleagues resigned office in 1801, on George III's refusal to pass the Catholic Emancipation Bill. G. formed part of the short-lived 'Government of all the Talents,' 1806-7. He was made a peer in 1790. See E. D. Adams, *Influence of Grenville on Pitt's Foreign Policy*, 1904.

Gresham, Sir Thomas (c. 1519-79), merchant, founder of the Royal Exchange, b. London, and educ. at Cambridge and Gray's Inn. He was apprenticed to his uncle, Sir John G., a London mercer, and in 1543 was admitted a member of the Mercers' Company, soon becoming extremely wealthy. He held the post of 'king's merchant' in Antwerp from 1552 to 1567. For a short while he acted as Queen Elizabeth I's ambas. at Brussels

(1559-61). During 1566-8 he erected the Royal Exchange (G.'s building was subsequently destroyed in the Great Fire, 1666) on the model of the one in Antwerp, and he left a large sum of money to endow a college with 7 lectureships. His house in Bishopsgate Street was converted to this purpose, and in it lectures were given from 1597 to 1767. See Dean Burgon, *Life and Times of Sir Thomas Gresham* (2 vols.), 1839; and life by F. R. Salter, 1925.



SIR THOMAS GRESHAM

Gresham's Law, 'bad money drives out good,' was first expounded by Sir Thomas Gresham to Elizabeth in 1558. Early economic writers, such as Copernicus, had, however, already explained it. The principle is that the worst form of currency will be most used and the more valuable tend to be exported. Thus, if there are 2 metals in circulation, the one which is less valuable will predominate. The law also applies where there is debased coinage with full-weight coinage, and metallic currency with inconvertible paper money. If the bad money is too bad it may be replaced; e.g. in Germany in 1923 good foreign currency replaced the discredited mark.

Gresset, Jean Baptiste Louis (1709-77), Fr. poet and dramatist, b. Amiens, where he was brought up by Jesuits, whose society he later joined. In 1734 he pub. his delightful poem, *Vert Vert*, of a convent parrot, but owing to the ridicule which the poem poured on monks and nuns G. was expelled from the society. His reputation was made, and he returned to Paris, where he pub. a second poem, *La Chartreuse*, followed by *Carême improvisé* and *Lutrin vivant*. He produced a tragedy, *Edouard III*, 1740, and 2 comedies, *Le Méchant* and *Sidnei*, 1745. He was admitted to the Academy, 1748. In 1759 he returned to Catholicism, and condemned his own verse. See A. A. Rénouard's ed. of his poems (3 vols.), 1811; and the lives by St Albain Berville, 1863, and Jules Wogue, 1894.

Greta Hall, in the Vale of Keswick, Cumberland, England, consists of 2 houses under one roof. Coleridge lived (1800-3) in one half, and from 1803 Southey occupied the other until his death in 1843.

Gretna Green, vil. in Dumfriesshire, Scotland, 9 m. NNW. of Carlisle. It was formerly notorious for the clandestine marriages which, after the abolition of Fleet marriages (1754), were held there, as being the nearest place within the Scottish border line. In 1856 a law was passed requiring one of the parties to reside in Scotland for 3 weeks previously. In the 'blacksmith's shop' case, at the court of session, Edinburgh (1839), in which Lord Russell rejected the claim of the partners of the blacksmith's shop and Gretna museum to the exclusive use of the name 'blacksmith shop' as a description of the premises, the judge affirmed that the legend or belief as to irregular runaway marriages being performed in bygone days by a blacksmith as the so-called priest, or in a smithy, was unfounded in fact—a belief which, without doubt, has led to many of the G. G. marriages. A collision between 2 passenger trains and a troop 'special' occurred here on the Caledonian Railway on 22 May 1915, involving 227 deaths. See P. O. Hutchinson, *Chronicles of Gretna Green*, 1844. Pop. 2800.

Grétry, André Ernest Modeste (1741-1813), Fr. composer of Walloon descent, b. Liège. He studied in Rome in 1759-66 and after teaching at Geneva settled in Paris in 1767. He wrote over 60 operas and won a very wide contemporary reputation, which has, however, diminished considerably, although he is regarded by musical historians as the originator of the modern type of Fr. comic opera. The best known are *Le Tableau parlant*, 1769, *Zémire et Azor*, 1771, *Céphale et Procris*, 1773, *Richard Cœur de Lion*, 1784, and *Panurge dans l'île des lanternes*, after Rabelais, 1785. See studies by H. de Curzon, 1907, S. Clercx, 1920, J. E. Bruy, 1931, and J. Sauvenier, 1934; also G.'s own *Reflexions* (4 vols.), 1919-22.

Greuze, Jean Baptiste (1725-1805), Fr. genre and portrait painter, b. Tournus, near Mâcon, in Burgundy; studied in the Academy at Paris. His first picture, 'Le Père de famille expliquant la Bible à ses enfants,' was so good that his teachers doubted whether it was his unaided production. His success, however, was followed up, and he won great popularity, especially for his pretty heads of young girls. He was elected to the Academy in 1769, and praised by Diderot, but the Fr. Revolution ended his contemporary vogue. His chief works are 'Aveugle trompé,' 1755, 'La Jeune Fille à l'agneau,' 'La Jeune Fille qui pleure le mort de son oiseau.' See life by C. Mauclair, 1905; and E. Pilon, *Greuze, peintre de la femme*, 1912.

Greville, Charles Cavendish, Fulke (1794-1865), Brit. diarist, educ. at Eton and Christ Church, Oxford. He became private secretary to Earl Bathurst and clerk of the council in ordinary (1821-59),

during which time he made excellent use of his opportunities for studying court and political life. He left his jour. to Henry Reeve, with the request that it should be pub. soon after his death. Accordingly instalments appeared in 1875, covering the years 1820-37; in 1885, covering 1837-51; and the 3rd portion, 1852-60, in 1887. These memoirs are of great value to students of 19th-cent. hist.

Greville, Sir Fulke, Lord Brooke (1554-1628), poet and statesman, b. Beauchamp Court, Warwickshire. He was educ. at Cambridge and Oxford and travelled abroad; entered the court of Queen Elizabeth in 1577. He was a friend of Sir Philip Sidney, whose life he wrote (posthumously pub. in 1652). G. wrote a tragedy, *Mustapha*, in 1609, a set of short poems termed 'sonnets,' with the title *Coelia*, first pub. in 1670, and a considerable number of laboured didactic poems. He was chancellor of the exchequer from 1614 to 1621, and was killed in a quarrel with his serving-man. See A. Grosart, *The Friend of Sir Philip Sidney*, 1894, and his ed. of G.'s collected works, 1870.

Grévy, François Paul Jules (1807-91), Fr. politician, president of the Fr. Rep., b. Montsous-Vaudrey, Jura. He became a lawyer. In 1848 G. was elected by the republicans of his dept to the Constituent Assembly, of which he became vice-president. He vigorously opposed the second empire under Napoleon III. In 1868 he was returned as deputy for the Jura and was elected president of the National Assembly in 1871. On the resignation of MacMahon in 1879 he was elected president of the rep. In 1885 he was re-elected for a further period of 7 years, but, on the discovery of his son-in-law Daniel Wilson's dishonest traffic in the decorations of the Legion of Honour, he was obliged to resign office. See A. Dansette, *L'Affaire Wilson et la chute du Président Grévy*, 1936.

Grey, Albert Henry George, 4th Earl (1851-1917), administrator, b. at St James's Palace and educ. at Harrow and at Trinity College, Cambridge. He entered Parliament as Liberal member for S. Northumberland in 1885. He succeeded his uncle in the earldom, 1894. In 1896-7 he was administrator of Rhodesia, where he was associated with Cecil Rhodes. He was director of the Brit. South Africa Company, 1898-1904, and lord-lieutenant of Northumberland, 1899-1904. He succeeded the earl of Minto as governor-general of Canada, 1904-11.

Grey, Charles, 2nd Earl, 1764-1845, Eng. statesman, b. Fallodon, Northumberland, and educated at Eton and Cambridge. In 1786 he was returned to Parliament in the Whig interest; he vigorously opposed the policy of Wm Pitt, associating himself with Fox, Burke, and Sheridan as one of the managers of the impeachment of Warren Hastings. On Burke's supporting the gov. in declaring war upon France during the revolution, G. remained faithful to his leader. He was one of the founders of the Society of the Friends of

the People, and asserted that Parliament did not represent the nation. He moved the impeachment of Pitt (1797), and took part in the secession of the Whigs as a protest against his policy. On the formation of the Fox-Greville ministry, he was appointed first lord of the Admiralty (1806) and, on the death of Fox, foreign secretary and leader of his party. During his ministry Wilberforce's Act abolishing African slavery was passed (1807). In that year his ministry retired and he led the opposition till 1830, when he became Premier and first lord of the Treasury. During this term of office the great Reform Bill went through all its readings, and passed the House of Lords in 1832. In 1834 he resigned office on the Irish question, and retired from public life. See his *Correspondence with William IV.*, 1867, *Correspondence with Princess Lieven*, 1890; and a life by G. M. Trevelyan, 1920.

Grey, Sir George (1799-1882), Eng. statesman, the nephew of Earl G., the Whig statesman, b. Gibraltar, and educ. at Oriel College, Oxford. He represented Devonport in Parliament from 1832 to 1847, and became under-secretary for the colonies in 1834. He was appointed judge-advocate (1839), chancellor of the duchy of Lancaster (1841), and, during Russell's ministry, home secretary (1846). He was not a brilliant speaker, but showed much practical ability during the Chartist riots and the Fenian activity in Ireland. Under Lord Palmerston he was home secretary (1855), chancellor of the duchy of Lancaster (1859), and home secretary again in 1861.

Grey, Sir George (1812-98), premier of New Zealand. He was b. at Lisbon, and educ. at the Royal Military College, Sandhurst. He entered the army in 1829, and attained his captaincy in 1837, when he sent in his papers. From 1837 to 1840 he explored the NW. region of Australia for the Royal Geographical Society, publishing the results of his travels in *Journals of Discovery in Australia*, 1841. In that year Lord John Russell appointed him governor of South Australia. He reduced the public expenditure, and showed such wisdom in his gov. of the young colony that in 1846 he was sent as governor to New Zealand, in order to conciliate the Maori chieftains, who were at the time in open rebellion. He succeeded in establishing peace and won the admiration of the natives. In 1854 he was appointed governor and commander-in-chief of the Cape of Good Hope, and had to use all his tact and firmness in allaying the discontent left after the Kafir war. In 1858, however, the Colonial Office objected to some measures of G., who thereupon resigned office. Feeling in his favour was high at the Cape and he resumed office. In 1861 he was a second time sent to New Zealand to bring the native war to an end. He resigned in 1867 on some point of difference between himself and the Colonial Office, and entered the New Zealand Legislature in 1874, becoming premier in 1877. He advocated many reforms,

including manhood suffrage, and had great influence with all parties, but proved a poor politician despite his great power as an orator. His pubes. include *Polynesian Mythology*, 1855, and *Proverbial Sayings of the Ancestors of the New Zealand Race*, 1858. See lives by W. Rees, 1892, and J. Collier, 1909. See also A. J. Harrop, *England and the Maori Wars*, 1938; *Dictionary of New Zealand Biography*, 1940.

Grey, Henry George, 3rd Earl (1802-94), statesman, b. Howick, Northumberland, and educ. at Eton and Trinity College, Cambridge. As Viscount Howick he entered the House of Commons, became colonial secretary (1846-52) in Russell's Cabinet, and pub. a defence of his colonial policy, entitled *Colonial Policy of Lord John Russell's Administration*, 1853. Later he strongly opposed home rule for Ireland.

Grey, Lady Jane (1537-54), 'nine days' queen' of England, daughter of Henry Grey, duke of Suffolk, and great-grand-

Tower. Mary's inclination was to spare her life, but when Jane's father took part in Wyatt's rebellion Jane and her husband were beheaded on a charge of high treason, 12 Feb. 1554. Jane was an exceedingly accomplished scholar, and Ascham admired especially her proficiency in Greek. She was also a convinced Protestant. See R. Davey, *The Nine Days' Queen*, 1906; and J. Lindsay, *Tudor Pawn*, 1938.

Grey, Zane (1872-1939), Amer. novelist, b. Zanesville, Ohio. Educ. at the Univ. of Pennsylvania, he worked as a dentist from 1898 to 1904. In the latter year he pub. *Betty Zane*, a historical novel, and soon afterwards started writing the 'Westerns' that made him famous. *The Last of the Plainsmen*, 1908, and *The Heritage of the Desert*, 1910, were followed by *Riders of the Purple Sage*, 1912, which sold over a million copies and made G.'s fortune. Among his later books are *Desert Gold*, 1913, *The Lone Star Ranger*, 1915, *The U.P. Trail*, 1918, and *The Call of the Canyon*, 1924.

Grey of Fallodon, Edward, 1st Viscount (1862-1933), statesman, b. London, educ. at Winchester and at Balliol College, Oxford, and entered Parliament as a Liberal in 1885. During the Rosebery administration (1892-5) he was appointed under-secretary for foreign affairs. From 1905 until 1916 he was secretary for foreign affairs, and received for his distinguished services the K.G. in 1912. He was largely responsible for the successful conclusion of the negotiations following the Balkan war of 1912-13, at the termination of which the peace of London was signed in 1913. As foreign secretary during the fateful months of July and Aug. 1914 he strove to avoid the disaster of the First World War. During his long term of office he showed an unswerving devotion to the highest conceptions of honourable conduct, but he has been criticised subsequently for his unwillingness to make quick decisions in moments of crisis.

In 1918 he went to the U.S.A. as ambas. until 1920, during which period he issued his pamphlet on the League of Nations, of which he became known as an enthusiastic supporter. From 1920 to 1924 he held the leadership of the Liberal party in the House of Lords. In 1925 he pub. his reminiscences under the title of *Twenty-five Years*, and was made a viscount in 1916. In 1928 he was elected chancellor of Oxford Univ. His other interests were angling, in which he was an acknowledged authority, tennis, at which he was a past champion, and wild bird sanctuaries. See H. Lutz, *Lord Grey and the World War* (trans.), 1928; and G. M. Trevelyan, *Grey of Fallodon*, 1937.

Greyhound, breed of dogs of great antiquity, found from the earliest times in E. Europe and Asia: many Egyptian monuments are ornamented with G.s. They are characterised by their long and narrow muzzles, slight build, and elongated limbs, and small ears falling at the tips, but they differ greatly in the length of their hair. They hunt almost entirely



LADY JANE GREY

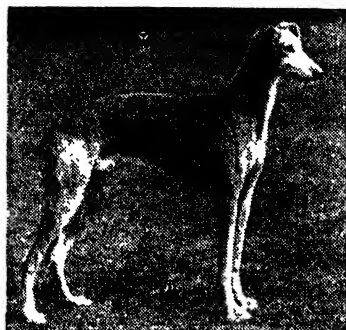
Portrait at Syon House, Middlesex

Artist unknown; English School,
16th Century

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daughter of Henry VII. She was b. at Bradgate in Leics. In 1553 the duke of Northumberland forced her into marrying his son, Lord Guilford Dudley. On the death of Edward VI she was proclaimed Queen Jane on 10 July 1553. But the country rallied to Mary Tudor, support for the Northumberland faction melted away, and on 19 July Mary was proclaimed queen and Jane sent to the

by sight, the sense of smell being defective. The long, slender skull points to affinity with the wolf. The Eng. G. is the best known of the group, and has sometimes been regarded as the parent of the others. It can readily be distinguished from all other dogs by its slender form, smooth hair, and rat-like tail, as well as by its comparatively large size. It is thoroughly adapted for extreme speed, the long tail being used as a balance for the body during quick turns, while the slender limbs with wire-like muscles give the greatest possible length of stride and offer the least possible resistance to the air. The favourite colour is a uniform sandy or pale grey tone, but the colour is of very little importance in comparison with the capacity for speed. The It. G. is kept



GREYHOUND

T. Fall

purely as a pet and is a miniature of the Eng. variety; its proportions are most elegant and its speed considerable, but it is so delicately made that it is almost unable to pull down even a rabbit. The eyes are larger and softer than in the Eng. type. The most valued It. G.s are a golden-fawn colour. The Scottish deerhound is a larger and heavier variety of the Eng. G., with rough and shaggy hair; it used to be employed both for coursing and deer stalking, and the twofold use has given rise to different strains of the breed. The Irish wolf-dogs are now extinct, but seem to have had characteristics of the G. Other varieties are the Grecian, Persian, and Russian G.s, and sev. oriental types characterised by their silky hair. See H. Edwards Clarke, *The Modern Greyhound*, 1948.

Greyhound Racing, term generally used to describe a race of greyhounds in pursuit of a mechanical hare. Coursing (q.v.) is also a form of G. R. The sport first became popular in America, and then rapidly spread to other countries, though it is claimed that the use of mechanical devices for greyhound races was practised in England long before the Americans popularised it. By means of a clever

device a mechanical imitation of a hare is made to move around a track, and as it passes the starting post the competing hounds are simultaneously released. The races are usually over distances of about a quarter to a third of a m., and as there is little chance of the dogs overtaking the 'hare,' the contest becomes a competitive race between the dogs. During 1926-7 this racing became extraordinarily popular in Great Britain, attracting not only the attention of sporting men, but also of company promoters. It was soon realised that a controlling body was required, so late in 1927 the National G. R. Club was set up. Rules were revised and co-ordinated much on the lines of those of the Jockey Club. This control, together with a widespread security force at the licensed tracks, has led to a standard never attained in any other country and has ensured the lasting popularity of the sport. The club issues licences to the proprietors of tracks, and although there is no necessity for the owners of a track to apply for a licence or abide by the rules, the advantages of doing so are obvious. There are now race-tracks in nearly all the large Brit. cities, the best known in London being at the White City, Harringay, Wembley, and Wimbledon. The Totalisator (q.v.) has been installed in most places.

Greymouth, tn and seaport of New Zealand at mouth of Grey R. in Westland Prov. It is the prin. centre of the W. coast of the South Is. for railway and tourist traffic. In the surrounding dist. the prin. industries are gold mining and farming. The harbour has an average depth of 24 ft on the bar at high water at ordinary spring tides, with an average depth of 22 ft in riv. at high water. The bor. has a public library, many hotels, a racecourse, recreation grounds, aerodrome, golf links, and tennis courts. The prin. industries of the tn are brick works, foundry and engineering works, brewery, and dairy factory. Pop. 8933.

Greynville, Sir Richard, see GRENVILLE.

Greys, Scots, see SCOTS GREYS, ROYAL.

Greystones, seaside resort, co. Wicklow. Rep. of Ireland, 7 m. from Bray at the foot of Bray Head. Pop. 1740.

Greytown: 1. Called also **San Juan del Norte**, tn and port of Nicaragua on the Caribbean Sea, at the mouth of the San Juan R. It was associated with the activities of the notorious Wm. Walker (q.v.) (c. 1854). It is a port of call for mail packets, and monopolises the import and export trade of the country. The prin. exports are bananas, coconuts, tortoise-shell, mahogany, india-rubber, and hides. The harbour, once very fine, is now badly silted up. A vast breakwater was erected pending the construction of a Nicaragua canal, but the tn is now almost deserted. Pop. 300.

2. Tn of Natal (q.v.), in the Umvoti valley, 65 m. SW. of Pietermaritzburg (q.v.). Pop.: Whites, 5621; Bantu, 3127; others, 995.

Gribble (*Limnoria terebrans*), tiny Crustacean isopod, which rolls itself up like a

woodlouse. It is common in European seas and has also been found in other parts of the world. It is disastrous to the timber of ships, burrowing into the superficial layers of wood and reducing them to a spongy mass which is easily washed away, thus exposing fresh layers to penetration. The damage done, however, is visible on the surface and is therefore less likely to reach serious proportions without being noticed than that caused by the shipworm (see TEREDO).

Griboyedov, Aleksandr Sergeyevich (1798-1829), Russian playwright. He is famous for his only great work, *Misfortune from Intelligence*, 1823, a satirical comedy upon Russian high society which was rejected by the censorship and not pub. until 1833. In 1828 G. became minister-plenipotentiary to Persia, where he was murdered during anti-Russian riots.

Grid, Map, see MAPS: NATIONAL GRID.

Grid System, the 3-phase 132 kV. transmission network interconnecting the main generating stations of Great Britain with open-air transformer and switching stations from which regional 33 kV. and 11 kV. distribution lines go out. The more efficient generating stations supply the base load and some less efficient stations are working only at peak load times. The system is divided into 6 dists. and all switching and load arrangements are directed from central control rooms where complete diagrams showing all switches are displayed, the opening and closing of switches being indicated by lamps or other means. Bankside (q.v.) control room has charge of the E. and S.E. England dists. The 3-phase, star/delta transformers range in size from 7.5 to 75 MVA. A switch house at the substations contains the l.v. switchgear, a d.c. motor-generator, and battery for operating the main switchgear. The 132 kV. overhead lines are carried on steel lattice pylons, 70 ft high for single-circuit, 80 ft for double lines. The conductors are steel-coated aluminium, 7 strands of steel covered by 30 strands aluminium, all of 0.11 in. diameter, overall diameter 0.77 in. The conductors are suspended by insulator chains of 9 or 10 cap and pin type insulators (q.v.). The average span is 900 ft, the minimum free height above earth is 22 ft. The earth wire joining the tops of the pylons has 7 strands of steel and 12 aluminium. The carrying capacity of a single 3-phase 132 kV. line is 50 MVA. See also DISTRIBUTION, ELECTRIC POWER.

Grieg, Edvard Hagerup (1843-1907), Norwegian composer and pianist, b. Bergen, descended from an Aberdonian, Alexander Greig, who left Scotland about 1760; his musically gifted mother, Gesine (née Hagerup) was descended from the Montrose family of Christie. He went to the Conservatoire of Leipzig for his musical education (1858-62). When he returned from Germany he met Rikard Nordraak, who was collecting and editing folk-songs, and it is in G.'s songs that we hear for the first time the music of the N.

His Op. 1, *Four Piano Pieces*, written during his last years in Leipzig, shows clearly that Schumann and Chopin were his ideals. Then followed sev. of his masterpieces: in 1865 the piano Sonata (Op. 7) and the violin Sonata in F (Op. 8); in 1868 he wrote what is perhaps his best-known composition, the piano Concerto in A minor (Op. 16)—a work instinct with beautiful themes, characteristic rhythm, and original harmony. In 1871 he founded the Musical Society in Christiania, of which he was for some years conductor. During that period he wrote his first *Lyric Pieces*, the violin Sonata in G (Op. 13), the



EDVARD GRIEG

E.N.A.

chorus *Landkjenning*, and the music to Bjørnson's *Sigurd Jorsalfar*. In 1874 G. was invited by Ibsen to write music for *Peer Gynt*. At the same time he wrote his second great piano work, the *Ballade* in G minor (Op. 24). At Loftus in Hardanger, whither he had now moved, he wrote 4 new masterpieces, the string Quartet in G minor (Op. 27), Album for male voices (Op. 30), *Den Bergtekne* (Op. 32), and *Vinc Songs* (Op. 33). Norwegian folk-melodies are the basis of his songs to the text of the poet A. O. Vinje. In 1880-2 he was conductor of the Musical Society Harmonien in Bergen and produced further great works, including the famous *Holberg Suite* for strings. Other dramatic works, besides the *Peer Gynt* music, include *Scener av Olav Trygvason* (Op. 50) and a melodrama *Bergliot* (Op. 42). By the eighties G. had become a world-renowned master. In 1888 he conducted for the first time in London and Birmingham, and in 1889 in Paris. G.'s music is intensely national in character and is mostly lyrical. His works for pianoforte solo include a great

number of lyric pieces. In chamber music he wrote 2 indifferent string quartets. Of his 3 sonatas for violin and piano 2 rank among his finest achievements. Of his numerous songs the settings, particularly of Hans Andersen and Bjørnson, are exquisitely poetic. The *Lyric Pieces* are character-sketches in the spirit of Schumann, fresh in melody and with a sonorous ring. G. married (1867) his cousin Nina Hagerup, a fine vocalist who with rare art brilliantly interpreted his songs. See E. Closson, *Edvard Grieg et la musique scandinave*, 1892; G. Schjelderup, *Edvard Grieg og hans værker*, 1903; H. T. Finck, *Edvard Grieg*, 1906; E. Eggen, *Edvard Grieg i Norges Musik-historie*, 1921; R. H. Stein, *Grieg*, 1921; and G. Abraham (ed.), *Grieg*, 1948.

Grierson, Sir George Abraham (1851-1941), Indianist, b. Glenagary, co. Dublin. Educ. at Shrewsbury and at Trinity College, Dublin, where he was Hindustani and Sanskrit exhibitor. Appointed member of the Indian civil service, 1873; 1898-1902 in charge of the Linguistic Survey of India and its superintendent. His monumental *Linguistic Survey of India*, 1899-1904, is the first complete and correlated account of the many languages of the Indian sub-continent, and in it are described and classified 179 languages and 541 dialects. The work has been the means of effecting an extraordinary change in the linguistic teaching of the Indian univs. He also made a close study of the religions, folk-lore, and mythology of India. He pub. grammars, chrestomathies, and handbooks on sev. Indian languages and scripts, including Kaithi, Mithili, Bihari, Hindustani, Kashmiri, and Pisacca, and was president or member of sev. learned societies, and D.C.L. in the univs. of Halle, Dublin, Cambridge, and Oxford.

Grierson, Sir Robert (c. 1655-1733), Laird of Lag, persecutor of the Covenanters (q.v.). He was especially active in helping to put down conventicles, and in enforcing the Test Act, using all kinds of severity to gain his ends. He was also one of those to condemn the Wigtown martyrs. In 1685 he was made a Nova Scotia baronet. After the revolution he was sev. times fined and imprisoned. He is the original of Scott's Sir Robert Redgauntlet. See Lt.-Col. A. Fergusson, *Laird of Lag*, 1885.

Griesbach, Johann Jacob (1745-1812), Ger. biblical critic, b. Butzbach in Hesse-Darmstadt. His greatest work was his critical version of the text of the N.T., 1774-5, the most remarkable feature of which was his div. of the MSS. into 3 groups: (1) the Alexandrine recension; (2) the Lat. or W. recension; (3) the Byzantine or E. recension. His other works are *Synopsis Evangeliorum*, 1774-5; *Populare Dogmatik*, 1779, and *Opuscula Academica* (ed. J. Gabler), 1825. See BIBLE. See life by F. Köthe, 1812.

Grieve, Christopher Murray (1892-), poet and critic, who used the pseudonym Hugh McDiarmid, b. Langholm, Dum-

frieshire. Educ. at Edinburgh Univ., he was one of the founders of the Scottish Nationalist party. As a poet, he was one of the leaders of the Scottish literary renaissance, employing the Lowland Scots dialect ('Lallans') in his verse. His vols. of poetry include *Sangschaw*, 1925, *Penny Whisp*, 1926, *A Drunk Man Looks at a Thistle*, 1926, *To Circumjack Cenrastus*, 1930, *First and Second Hymn to Lenin*, 1932, 1935, and *Scots Unbound*, 1932. Critical works are *Contemporary Scottish Studies*, 1924, *Albion, or Scotland and the Future*, 1927, *At the Sign of the Thistle*, 1934, and *Scottish Eccentrics*, 1936. He also ed. the *Golden Treasury of Scottish Poetry*, 1941. *Lucky Poet*, 1943, is an autobiography.

Griffin, Bernard William (1899-1956), Eng. cardinal, b. Birmingham; educ. at Oscott College and at the Eng. and Beda Colleges in Rome. He was ordained priest in 1924 and became administrator of Father Hudson's Homes, Coleshill, 1937-43. He was bishop auxiliary of Birmingham, 1938-43. In the latter year he was appointed to the archiepiscopal see of Westminster, and elevated to the Sacred College in 1946.

Griffin, Gerald (1803-40), novelist and dramatic writer, b. Limerick. After great hardships he succeeded with *The Noyades*, an opera entirely in recitative. His tragedies were entirely unsuccessful, but he attained great popularity by the *Holland Tide Tales*, 1827, followed by *Tales of the Munster Festivals*, 1827, and the fine novel *The Collegians*, 1829, which Dion Boucicault adapted for the stage under the title of *The Colleen Bawn*. Among his other novels are *The Invasion*, 1832, *Tales of my Neighbourhood*, 1835, *The Duke of Monmouth*, 1836, and *Talis Qualis, or Tales of the Jury-room*, 1842. In 1838 he joined the Society of the Christian Brothers at Dublin, whence he removed to the N. monastery, Cork, where he d. of typhus.

Griffin, city of Georgia, U.S.A., 35 m. S. of Atlanta, and the cap. of Spalding co. Here is situated the state agric. experiment station, and there is an important cotton and fruit trade. G. is also a textile-manufacturing centre. Pop. 13,982.

Griffin, or **Griffon**, mythological beast used in architectural decoration and as a charge in heraldry (q.v.). It is the oldest and most common of the outlandish monsters used as heraldic devices, having the hinder parts of a lion with the foreparts, head and shoulders, wings and forelegs of an eagle. When the head alone is borne it can be distinguished from that of the eagle by the long tuft under the beak and the pointed ears. Sir Simon de Montagu, 1st Baron Montagu (d. 1316), quartered azure a G. segreant Or in the Falkirk Roll, 1298 (Harl. MS. 6589, ff. 9, 9b). This is one of the earliest extant examples of a quarterly coat. He bore the same in the Carlawerock Roll, 1300 (Cott. MS. Calig., A. xviii, ff. 236-30b), and on his countersail attached to the Baron's letter to the pope in 1301 (Birch.

Cat. Brit. Mus. Seals, No. 11851). It was not borne by any of his descendants.

Griffith, Arthur (1872-1922), Irish statesman, son of Arthur G., a printer. He was b. and educ. in Dublin, and became a compositor. He became a member of the Gaelic League, the Celtic Literary Society, and the Irish Republican Brotherhood. In 1896 he went to South Africa and worked in the Rand. He returned to Dublin in 1898, and in the following year estab. with Wm Rooney, a weekly jour., the *United Irishman*. It was a brilliant, though unprofitable, paper, and on Rooney's death in 1901 G. became its sole director. G. at length left the I.R.B., and began to preach a policy of passive resistance to Brit. rule in Ireland. In Oct. 1902 an organisation based on his policy, and called *Cumann na nGaedheal*, was founded—with the watchword '*Sinn Féin*' (q.v.); this watchword soon itself became the name of a movement. In 1904 G. pub. an influential pamphlet, *The Resurrection of Hungary*, which stimulated the Irish nationalist movement. The name of his newspaper was changed in 1906 to *Sinn Féin*, and for a while at this period it was a daily; later the name was changed again, and the paper now appeared as *Eire*. On the rise of the Irish Volunteers as a counter-stroke to the Ulster Volunteers, G. was active on their side, and he assisted in the gun-running episode at Howth in July 1914. *Eire*, suppressed, was succeeded by *Scissors and Paste*. G. offered to take part in the Easter Rising of 1916, but was dissuaded by the leaders; later he was interned with them at Wandsworth and Reading. In July 1917, de Valera (q.v.) was elected leader of the *Sinn Féin* movement on the motion of G. G.'s paper reappeared as *Nationality*, and again as *Eire Og*. While they were again interned in 1918, de Valera and G. were elected President and Vice-President respectively of an Irish Rep. The terrorist period of the Black and Tans followed. G. was again in prison in 1920. He was acting-President during de Valera's absence in America, 1919-20, and in 1921 he had a prominent part in the negotiations in London for a settlement of the Irish question. It was largely owing to G.'s persuasive moderation that the Anglo-Irish Treaty was accepted and that the Irish Free State (q.v.) came into being. On 10 Jan. 1922 he was elected President of *Dáil Éireann*, and, on the ratification of the Anglo-Irish Treaty by the *Dáil*, he had the task of suppressing the republican irreconcilables. He d. suddenly in a nursing-home in Lower Leeson Street, Dublin, on 12 Aug. 1922.

Griffith, David Wark (1880-1948), Amer. film director, b. La Grange, Kentucky; educ. at the univ. of Kentucky. He began as a journalist and an actor in various companies. G. was one of the first directors to make films of more than 1 reel. His first film to become known internationally was *The Birth of a Nation*, 1915, followed by *Intolerance*, 1916. The

photographic quality and the masterly production, exemplified by the handling of great crowds, and the introduction of the close-up to give emphasis to incidents and facial expressions, the development of the flash-back and the fade-out, all mark the work of G. as amongst the greatest in the annals of film production. In 1919 he founded United Artists with Mary Pickford, Charles Chaplin, and Douglas Fairbanks (q.q.v.).

Griffith, William (1810-45), botanist, b. Petersham, Surrey. His first public work appeared in Dr Wallich's *Plantae Asiaticae rariorae* in 1832; in the same year he was appointed assistant-surgeon in the service of the East India Company, and became Superintendent, Calcutta Botanic Garden. His most important papers were pub. in the *Transactions of the Linnean Society*, and his books were pub. by J. MacClelland after G.'s death.

Griffith, tn in W. section of Murrumbidgee Irrigation Area, New South Wales, Australia, 395 m. W. of Sydney by rail. Vineyards, fruit, and rice-growing are among the prin. industries. Pop. 6600.

Griffiths, James (1890-), Brit. politician, educ. at Bettws Council School, Ammanford, and the Labour College, London. From 1916 to 1919 he was secretary of Ammanford Trade Council; he was president of the South Wales Miners' Federation, 1934-6. Since 1936 he has been a Labour M.P. In the Labour Govs. 1945-51 G. was minister of National Insurance, 1945-50, and secretary of state for the colonies, 1950-1. In 1956 G. was elected deputy leader of the parl. Labour party.

Griffon Bruxellois, toy dog of terrier extraction bred in Belgium, with a rough coat, the smooth dog of the same breed being the 'petit Brabançon'. It was introduced into England in 1895. The points of the G. B. are general appearance intelligent, sprightly, robust, and compact; head large and rounded, covered with rather coarse, rough hair; ears semi-erect when not clipped; eyes very large and black; eyelashes and eyebrows finished with long stiff black hair, nose short, black, surrounded with hair and converging upwards to meet the hair round the eyes; lips edged with a black moustache; chest rather wide and deep; legs of medium length and very straight; tail upwards, colour red; harsh and wiry coat; weight, small size, maximum, 5 lb., large size 10 lb.

Grigorescu, Nicolas Ion (1838-1907), Rumanian painter, b. near Bucharest. He began as an icon painter, then studied in Paris, and became famous during the Russo-Turkish war (1877-8) by his fine military pieces, notably 'The Storming of Smardan,' which is in the tn hall at Bucharest. He also painted Rumanian peasant scenes and a spirited portrait of 'Carmen Sylva.'

Grigson, Geoffrey Edward Harvey (1905-), poet and critic, b. Plym, Cornwall. Educ. at St John's, Leatherhead, and Oxford, he became a journalist. His vols. of verse include *Several Observations*, 1939, *Under the Cliff*, 1943, and *The*

Isles of Scilly, 1946. He compiled sev. anthologies, including *New Verse*, 1939, and *Poetry of the Present*, 1949, and wrote studies of Wyndham Lewis, 1951, and Gerard Manley Hopkins, 1955. *The Crest on the Silver*, 1950, is autobiographical.

Grikes, word used in Yorks to describe open crevices, generally arranged in a rectangular pattern, developed on the surface of a limestone plateau. The crevices are formed by the solution of limestone along joints or planes of weakness.

Grilling, see COOKERY.

Grillparzer, Franz (1791-1872). Greatest dramatic poet of Austria, b. Vienna. In 1818 he was appointed poet to the Hofburg Theatre, and was promoted to the Hofkammer (Exchequer). In 1832, he was made director of archives of the Hofkammer, from which he retired with the title of *Hofrat* in 1856. He first attracted attention by his tragedy *Die Ahnfrau*, 1817, a 'fate-drama,' in the trochaic measure of the Sp. drama. In 1818 appeared *Sappho*, a drama in the classic spirit of Goethe's *Tasso*, followed by the trilogy *Das goldene Vlies*, 1821, comprising *Der Gasfreund*, *Die Argonauten*, and *Medea*, all noble pieces of work, modern in sentiment, and classical in design. His historical tragedies *König Ottokars Glück und Ende*, 1823, and *Ein treuer Diener seines Herrn*, 1826, first brought G. into conflict with the censor, a struggle which helped to embitter all this period of his life. With *Des Meeres und der Liebe Wellen*, 1831, a dramatisation of the story of Hero and Leander, he returned to the classical themes and the style of *Sappho* with an even greater measure of the Sp. grace of expression, which he borrowed mainly from Calderon. *Der Traum, ein Leben*, 1834, is his technical masterpiece and the first of his dramas without a tragic ending. His only attempt at comedy, *Weh dem, der lügt*, 1838, in spite of its brilliance, failed to meet the popular taste and disgusted him for ever with the Austrian theatre. Three unpublished tragedies, *Die Jüdin von Toledo*, *Ein Bruderknecht in Habsburg*, and *Libussa*, were found among his papers after his death. Although essentially a dramatist, his lyric poetry is of fine quality, and he left one prose masterpiece, *Der arme Spickmann*, 1848. See G. Pollak, *F. Grillparzer and the Austrian Drama*, 1907; H. von Hofmannsthal, *Grillparzers politisches Vermächtnis*, 1915; J. Nadler, *Grillparzer*, 1948; J. Sprengler, *Grillparzer, der Tragiker der Schuld*, 1947. See also *Jahrbuch der Grillparzer-Gesellschaft*, 1891 ss.

Grilse, see SALMON.

Grimald, Nicholas (1519-62), poet and theologian, b. Hunts. Educ. at Cambridge, he became a probationer fellow of Merton College, Oxford, in 1541 and chaplain to Bishop Ridley in 1547. His connection with Ridley led to his imprisonment, and he is said to have escaped only by recanting. He is best remembered by his contributions to

Tottel's *Songes and Sonettes*, 1557, although for some reason 30 of his 40 poems were suppressed in the 2nd ed. He was also the first poet after Surrey to use blank verse. There are 2 Lat. tragedies of G.'s still extant: *Archipropheta sive Johannes Baptistae*, 1548, and *Christus redivivus*, 1543; and trans. of Cicero's *De Officiis* and Virgil's *Georgics*. See life by L. R. Merrill, 1925.

Grimaldi, Francesco Maria (1619-63), It. Jesuit and natural philosopher, b. Bologna. He wrote a valuable work entitled *Physico-mathesis de Lumine, Coloribus, et Iride aliisque annexis*, 1665, which contains accounts of numerous experiments relating to the interference of the rays of light. This phenomenon of interference was at the time enunciated as a proposition: 'That a body actually enlightened may become obscure by adding new light to that which it has already received.' He was also the discoverer of 'diffraction' of light, afterwards designated 'inflection' by Newton, who also corrected his theories of the different refrangibilities of the rays.

Grimaldi, Joseph (1779-1837), the most famous of Eng. clowns, b. London, the son of an It. actor. His father was nearly 70 when G. was b. and tradition has it that he beat his son unmercifully in the course of training him for the stage. He first appeared at Sadler's Wells as an infant dancer in 1781, and in the same year he took part in the pantomime at Drury Lane. When G. was 9 his father d., and in the circumstances G. was allowed to act both at Drury Lane and at Sadler's Wells on the same evening. When he was 15 Drury Lane paid him £3 a week and Sadler's Wells £4; yet he still found time to help in an uncle's butcher's shop. When 19 he married the daughter of one of the proprietors of Sadler's Wells, but she d. very soon afterwards. Four years later he married a Drury Lane actress. His health gave way at the peak of his fame and he was a cripple by 45. Finally he was dependent on charity. His greatest success was in *Mother Goose* at Covent Garden in 1806, a part which he constantly revived until his last performance in Mar. 1828. G. was a creative artist, whose humorous effects were achieved by ceaseless labour and thought. See his memoirs, ed. by Charles Dickens, 1838.

Grime's Graves, neolithic flint mines at Weeting, Norfolk, England. They are the only prehistoric flint mines so far found N. of the R. Thames. Flint knapping is still carried on in this area by a few craftsmen. There are 4 other prehistoric flint mines in Sussex, one near Salisbury in Wilts, and one at Peppard in Oxon.

Grimm, name of 2 brothers, distinguished Ger. philologists, both b. at Hanau, and fellow students in law at Marburg Univ. under Prof. Savigny, a celebrated Ger. jurisconsult, the founder of the 'historical school' in Germany.

Jakob Ludwig Karl (1785-1863) began his literary career in the early 19th cent.

his assistant to Savigny. This work enabled G. to gain valuable insight into the 'scientific method' he later pursued in his investigations of the Teutonic languages, which led to his becoming the founder of Germanic philology and to his epoch-making contribution to *Grimm's Law* (q.v.), enunciated in his *Deutsche Grammatik*, the greatest philological work of the age. While librarian to Jerome Buonaparte, king of Westphalia 1807-1813, and then to the Cassel-Hesse Elector, he was able to carry on his favourite studies of philology and of old Ger. poetry. In 1811 he pub. his first work in the latter subject, *Ueber den altdeutschen Meistergesang*. During 1827-37 he was lecturer in Ger. language, literature, and antiquities at Göttingen Univ. Later he became lecturer at Berlin Univ. His *Kinder- und Hausmärchen*, collected and pub. with his brother, 1812-14, and *Die deutschen Sagen*, 1816-18, made fairy-tales popular throughout Europe, and gave rise to the investigations which estab. the modern science of folklore. The brothers G., in their quest for old stories, went to medieval MSS. and folk-books and, above all, took down from dictation what Ger. peasants remembered of the old tales. In 1841 they became members of the Berlin Academy of Sciences, and settled in that city. J. G.'s *Deutsche Grammatik*, 1819-37, became the foundation of the historical grammar of Germanic philology. His *Deutsche Rechtsaltertümer*, 1828, and *Deutsche Mythologie*, 1835, treat of the connection between anc. Germanic law and anc. Germanic poetry, and of the survivals of anc. traditions. Finally the *Geschichte der deutschen Sprache* (2 vols.), 1848, containing a series of treatises, is a sort of appendix to his *Deutsche Grammatik*.

Wilhelm Karl (1786-1859) collaborated with his brother, particularly in the collection of the fairy tales. He wrote independently *Altäidische Heldenlieder*, 1811, *Die deutsche Heldensage*, 1829, *Kämpfe-Vöser*, and many treatises on Ger. literature and antiquities. His *Über deutsche Runen*, 1821, and *Zur Literatur der Runen*, 1828, became the basis for study of runes. He also ed. critical eds. of Ger. texts. See trans. of their works by L. Crane, 1882, and M. Hunt, 1884, with an introduction by A. Lang. See E. Tonnellat, *Les Frères Grimm: leur oeuvre de jeunesse*, 1912.

Grimm, Friedrich Melchior, Baron von (1723-1807), Ger. writer, b. Ratibon and educ. at Leipzig. From 1748 to 1790 he lived in Paris, made the acquaintance of Rousseau, and became closely associated with the Encyclopaedists. In the musical war between the partisans of Fr. and It. music G. sided with the latter and wrote in their defence a witty pamphlet, *Le Petit Prophète de Boehmischbroda*, 1753, followed by *Lettres sur la musique française*. On becoming secretary to the duke of Orleans he wrote, in conjunction with Diderot and Abbé Ragnal, literary bulletins containing acute criticism on Fr. literature. In 1776 he was appointed

minister to the Fr. court by the duke of Gotha, and in 1795 minister of Russia to Hamburg by the Empress Catherine. His *Correspondance littéraire, philosophique, et critique* was pub. in 1812.

Grimma, Ger. tn in the dist. of Leipzig, on the Mulde, 16 m. ESE. of Leipzig (q.v.). It has a school, the *Fürstenschule*, which dates from the 16th cent., and near by are the ruins of the convent in which Catharine von Bora was a nun before her marriage to Luther (q.v.). There are engineering and paper industries. Pop. 15,000.

Grimmelshausen, Hans Jakob Christoffel von (c. 1625-76), Ger. author, b. Gelnhausen in Hessen. As a boy he was kidnapped by Hessian soldiers, and becoming a soldier himself fought on the imperial side in the Thirty Years War. At the end of the war he settled at Renchen in Baden, becoming *Schultheiss* (magistrate) of Renchen in 1665. He devoted his leisure to literature and wrote sev. remarkable novels. In 1669 he pub. *Der abenteuerliche Simplicissimus* (5 vols.), a work which is modelled on the picaresque romances of Spain and is largely autobiographical in its descriptions of the stirring scenes of the hero's childhood. Its success made him write a 6th vol. Among his other works are *Die Erbsüßer und Landstörzerin Courasche*, c. 1669, *Der seltsame Springinsfeld*, 1670, and *Das wunderbare Vögelnest*, 1672. His satires and gallant novels, modelled on *Cyrano de Bergerac*, such as *Dietwald und Amelinde*, 1670, are very inferior to *Simplicissimus*. See *Simplicissimus* (ed. by H. Kurz, 1863-4, and J. H. Scholtz, 1939).

Grimm's Law, important phonetic law which states the consonantal changes of words in the course of their development from Proto-Indo-European into Germanic. The various languages of the Indo-European family show that, as they developed from the original language, each into its own special form, their consonants and vowels underwent change according to a certain law. Knowing this law, the philologist can take a Proto-Indo-European word and say beforehand in what form that word will be found in any one of the languages descended from it—in Sanskrit, Lat., Greek, or Germanic. The vowel or consonant of the word will have undergone a regular and known metamorphosis. He could predict, for example, that *h₁rātṛ* in Sanskrit would be in Greek *phratēr*, in Lat. *frater*, in Gothic *brōþar*, in German *Bruder*, and in Eng. *brother*. The Germanic languages which Grimm investigated differ from Primitive Indo-European much more in their consonants than in their vowels. The Primitive Germanic system of consonants is best seen in Gothic, the most anc. of the Germanic languages, in Early Low German, and in Early Scandinavian. The Primitive Indo-European consonantal system is seen, with little deviation, in Sanskrit, Greek, Lat., Lithuanian, Old Slavonic, and Old Celtic. The Germanic languages underwent their characteristic

changes at 2 more or less definitely marked epochs. The first, known as the *First Consonant Shift*, took place in prehistoric times (probably in the second half of the 1st millennium BC); the *Second Consonant Shift* belongs to the 5th, 6th, and 7th cents.; indeed, the first example of this consonant shift appears fully developed in a Lombard edict of A.D. 643. In this second shift certain Primitive Germanic consonants underwent a change as the words in which they occurred entered the High Ger. dialects. A word beginning with a *t* in Gothic, for instance, would change this *t* for a *z* (pronounced *ts*) in High German. Gothic, which underwent only the first consonant shift, is the best representative of the Low Ger. and Scandinavian dialects; Old High German is the best representative of the other divs. of the Germanic languages. The most important consonantal changes by which the Germanic languages are

Oxford, and called to the Bar, 1937. He served in the Second World War and in 1950 won Orkney and Shetland for the Liberals in the general election. Generally considered a Liberal in the Radical tradition, he succeeded Clement Davies as leader of the parl. Liberal party in 1956.

Grim's Dyke, ditch and earthwork near the N. boundary of Midx, England. It stretches for 4 m., and the height and width of the earthwork are about 9 ft and 100 ft respectively. The earliest reference to it so far found is in the 13th cent. in the form 'Grime's Ditch.' As to its date and purpose, authorities differ widely, most regarding it as a Saxon construction of the 5th or 6th cent., but others assign it to prehistoric times. Its purpose may have been either defensive or agricultural, i.e. an earthwork to control the streams in the neighbourhood. Grim may be another name for Woden, or the Devil, in former days popularly held responsible for an

	Sanskrit	Greek	Latin	Gothic	Old High German	German	English
<i>bh</i>	bhrātr	phratēr	frater	brōþar	bruoder	Bruder	brother
<i>dh</i>	rudhira	erūthros	ruber	rauds	rōt	rot	red
<i>gh</i>	stighnōti	steichō	—	steigan	stigan	steigen	stye
<i>h</i>	—	—	tribus	þaūrp	dorf	Dorf	thorp
<i>d</i>	dam	danmañ	domaro	tamjan	zamjam	zähmen	tame
<i>g</i>	jānu	gonu	genu	knlu	knlu	Knle	knee
<i>p</i>	pāda	pour	pes	fōtus	fuoꝛ	Fuss	foot
<i>t</i>	tri	treis	tres	þreis	drī	drei	three
<i>k</i>	kampata	kōpē	capere	haþjan	heffan	heben	heave

distinguished from the other Indo-European branches are summed up in the formula known as G. L., from the Ger. philologist Jakob Ludwig Karl Grimm (1785-1863), who first worked out the law, although it was not he who discovered it, this law being already envisaged by the Dan. philologist Rasmus Christian Rask (1787-1832). It is now known that G. L. was stated by Grimm in a form no longer admitted as exact. This law, which takes into account the 'permutation of consonants' of the first shift, states that the Indo-European *bh*, *dh*, *gh* (the 'voiced aspirates') ultimately became in Germanic *b*, *d*, *g* ('voiced stops' or 'mediae', or 'voiced plosives'), that *b*, *d*, *g* became *p*, *t*, *k* ('unvoiced stops' or 'tenues', or 'unvoiced plosives'), and that *p*, *t*, *k* became *f*, *þ* (*th*), *x* ('unvoiced spirants' or 'fricatives'; the *x* is like *ch* in *loch*).

The Amer. philologist Wm Dwight Whitney believes that these changes, so arbitrary in appearance, have a physiological basis. They arise in the course of what Max Müller calls 'dialectic growth,' similar to that instanced in the word *vat*, in wine-vat, which is the O.E. form of the N. Eng. *fat*, a vessel, and in such a dialectal change as that of *he liveth* into *he lives*, where the aspirate dental *th* becomes *s*. See R. Morris, *Historical Outlines of English Accidence* (London), 1872, revised by L. Kellner (London), 1895.

Grimond, Joseph (1913-). Brit. politician, educ. at Eton and Balliol College,

earthworks, or it may derive from *gruma*, a boundary. The name is given to similar earthworks in the cos. of Bucks. Herts, and Wilts.

Grimsby, seaport in Lincs, England, on the S. bank of the Humber, 15 m. S.E. of Hull, largest fishing port in England. In 1860 the total number of fishing vessels using the port was 60 (sailing) and the fish sent by rail 96,840 cwt.; in 1880, following dock improvements, the figures were 587 sailing vessels and 938,620 cwt.; in 1909 the total number of vessels was 608 (29 sailing and 579 steam) and the fish dispatched amounted to 3,519,300 cwt. The present fishing fleet comprises 229 steam trawlers, the largest of which are over 1000 tons dead weight. G. trawlers fish as far afield as the Faroes, Iceland, Bear Is., and the White Sea. The 3 fish docks cover 64 ac. of water and the pontoon or covered fish market, 1½ m. long, has overall access to the railway for handling and dispatching catches. The ann. average value of fish landed at G. was, before the Second World War, between £3,000,000 and £4,000,000. In 1953 more than 4½ million cwt. of fish was landed, and sold for nearly £12,000,000. Ancillary industries to the fishing fleet include ship repairing and shipbuilding, marine engineering, net, rope, and twine making, box making and cooperage, ice manuf. and cold storage, fish salting and curing and processing, preparation of fish meals and fertilisers, and ship's husbandry.

While G.'s staple industry is fishing, there are other well estab. industries in the tn; these include saw-mills, animal foods and medicines, biscuits, bituminous paints brick tiles and clayware, chemical products, flour, iron and alloy castings, jam and preserves, light cars, paper and newsprint, plastics, wood-work, and furniture. The corporation's new industrial estates have attracted a number of heavy industries, principally concerned with chemicals.

There are many fine old buildings; the first tn hall, a substantial 'mud and stud' structure built by the burgesses in 1394, stood for nearly 4 centuries until 1780, when it was replaced by a brick building demolished in 1863, the present tn hall being erected on a new site. The site of the par. church of St Mary is still marked by the 3 St Mary's Gates, W., S., and E. St James was entirely rebuilt, probably between 1190 and 1225, in the prevailing Early Eng. style. A drastic 'restoration' was carried out in 1718, when the transepts became a thoroughfare from High Street to Deansgate, and mayoral elections took place in the building. Finally in 1858 Canon Ainslie, as vicar, began the work of true restoration, which was carried on by his successors up to 1928. Of Wellow Abbey, which stood $\frac{1}{2}$ m. to the S. of the church, hardly a vestige remains. Friargate Crossing indicates that the Austin Friars had a house there. The Franciscans, Grey Friars, had their house in what is now Haven Street, the home of Gervase Holles, the 17th-cent. antiquary. The Templars had a preceptory in Bargate. Notable institutions are the College of Further Education, a centre of co. college activities; the Technical Secondary School; the G. Nautical School (1922), which replaced the Fisherlads' Institute of 1879 and which has 5 main depts (senior navigation, junior nautical, marine engineering, marine cookery, and deep-sea fishing); and the School of Art (which is also the home of the N. Lincs Art Society). There is also a public library.

The name of G. is of Dan. origin, meaning 'Grim's town.' The legend of Havelok and Grim, first related by Peter of Langtoft, a late 13th-cent. writer, tells how Grim or Gryme, a poor merchant, rescued a baby whom he found deserted by the wayside. He brought him up and later found that he was the son of a Dan. king, Birkabeen (no such king is known), by whom he was richly rewarded, and so founded the tn of G. in memory of his foster son. Evidently the facts are that one of the leaders of the invasion or of the early settlers bore the not uncommon name of Grim and bequeathed it to his Eng. home. There is evidence of Rom. occupation, but by the Domesday survey in 1087 the township was divided between Odo, bishop of Bayeux, Ralph de Mortemer, and Drew de Beurere. Richard I held a meeting here (as recorded in the Black Book of the Admiralty) probably in April 1194, which indicates that it was then the main port on the Humber. King John granted its first charter for 55 marks

of gold. In 1319 Edward II granted a charter allowing the burgesses to hold 2 fairs and to have their own jail and assizes. The prosperity of G. in the Middle Ages was, however, interrupted, and frequent references to the silting up of the haven and the consequent decay of the tn occur throughout Tudor and Stuart times. But in 1800 the new dock was opened under an Act of Parliament for enlarging and improving the haven. In 1849 Prince Albert laid the foundation of the Royal Dock, the outcome of the amalgamation of the old G. Haven Company with the Manchester, Sheffield, and Lincs Railway Company which extended the line to G. in 1848. After the opening of the Royal Dock in 1852 the spectacular rise of G. began, when the fishing industry was started with a few trawlers, and the corporation laid out roads in the E. marsh. During the next half-century G. became the foremost fishing port in the world. In 1912 a new commercial dock was opened at Immingham, 6 m. up riv., to relieve the congestion in the docks at G. and the new fish dock, a development that was retarded by the First World War, was eventually opened in 1934. In the Second World War G. was a naval base of some slight importance, and on some 28 occasions missiles were dropped on the tn; but the losses were comparatively slight. The tn returns 1 member to Parliament. Cleethorpes, $\frac{3}{4}$ m. SE. of G., is a well-known health resort. Pop. (estimated) 93,300. See G. L. Alward, *The Sea Fisheries of Great Britain and Ireland*, 1932, and M. Graham, *Fish Gate*, 1943.

Grimmel Pass, in the Bernese Alps, Switzerland. It is over 7000 ft high, and leads from the Rhône valley to the valley of the Aar, thus connecting the cantons of Valais and Bern. At the N. foot of the pass is the G. Hospice. It was here that the Fr. were victorious over the Austrians in 1799.

Grimsey, is off the N. coast of Iceland, 30 m. from the nearest point of the mainland, surrounded by teeming fishing grounds and girt on 3 sides by high perpendicular cliffs in which myriads of seaowl nest. G.'s maximum altitude is 344 ft. The dwindling pop. now (1954) numbers only 72, and though the is. has a parsonage there is no priest there, the latest one, a Scotsman, having left in 1952. The is. has a landing strip, but this is not approved for international flight.

The is. is connected with a memorable historical incident. In his *Heimskringla*, the Saga of King Olav Haraldsson of Norway, Snorri Sturluson (q.v.) relates how that king was anxious to add the Faroes and Iceland to his domain. About 1020 he sent a messenger to the Icelandic Althing (q.v.) requesting that as a token of the country's goodwill they would give him the rock of G. and he would reciprocate with suitable gifts. The chieftains concerned were on the point of acceding to this when one,

Einar Eyjólfsson, who had remained silent, rose and delivered a speech which in its brevity is a masterpiece of eloquence. He pointed out that the is. could on its own resources maintain a whole army, and his words made the others realise what they had been about to do. See R. Jack, *Arctic Living*, 1955.



Swiss National Tourist Office
THE GRIMSEL PASS, SWITZERLAND

Grimshaw, Beatrice Ethel (1871-1953), novelist, b. Cloona, Antrim. Educ. at Bedford College, London, and Queen's Univ., Belfast, she became a journalist. After travelling extensively in the South Seas she settled there in 1906 and wrote sev. travel books, including *From Fiji to the Cannibal Islands*, 1907, and *The New Guinea*, 1910. Most of her 30-odd novels are about the Pacific is., among the best-known being *Vaiti of the Islands*, 1906, *When the Red Gods Call*, 1911, and *My Lady Far Away*, 1929.

Grimspound, relic of an ancient stronghold on Dartmoor, Devon, England, near Hamilton Ridge. It consists of a score of stone huts within a stone wall about 5 ft high. It is said to be an example of an Early Bronze Age vil. camp-dwelling, and is a unique specimen.

Grimthorpe, Edmund Beckett Denison, 1st Baron (1816-1905), lawyer and horologist, b. Carlton Hall, near Newark; educ. at Doncaster, Eton, and Trinity College, Cambridge; called to the Bar at Lincoln's Inn, 1841; Q.C. 1854. He succeeded to his father's baronetcy in 1874, dropping the name of Denison and taking the title of Sir Edmund Beckett. He was raised to the peerage in 1886.

G. was the author of *A Rudimentary Treatise on Clocks, Watches and Bells*, 1850. He also designed the great clock at the Palace of Westminster, familiarly known as 'Big Ben' (q.v.) (see also CLOCK). He was interested in architecture, and interfered disastrously with the restoration of St Alban's Cathedral by Sir George Gilbert Scott (q.v.), on the strength of his own generous contribution to the funds.

Grin, Henri Louis, see DE ROUGE MONT. **Grindal, Edmund** (1519-83), divine; a prebendary of Westminster under Edward VI; lived on the Continent during Mary's reign, and became greatly influenced by the teachings of Calvin; returned on Elizabeth's accession. Bishop of London, 1559; archbishop of York, 1570; of Canterbury, 1575. His Puritan sympathies were not shared by the court and he declined to suppress private meetings of the clergy for scriptural study; he was accordingly sequestered. Writings and life were printed by the Parker Society, 1853.

Grindelwald, mt-vil. situated in the Bernese Oberland, Switzerland. It is a



Swiss National Tourist Office
GRINDELWALD WITH WETTERHORN,
BERNESE OBERLAND, SWITZERLAND

popular resort with extensive pasture lands and lofty mts; the impressive N. face of the Eiger towers over G. It is connected by rail with Interlaken, Lauterbrunnen, and the Jungfrauoch.

Grinevetskiy, Vasily Ignat'yevich (1871-919), Russian engineer and economist. He was a prof. (later director) of the

Moscow Higher Technical School, was a leading figure among the Russian technical intelligentsia, and was with the Whites (see WHITE ARMY) during the civil war and d. in Yekaterinodar. In his book *The Post-war Prospects of Russian Industry* (Khar'kov, 1919, 2nd ed. Moscow, 1922) G. outlined the main problems of Russia's economic development and indicated the best means for their solution. This book greatly influenced economic thought in Russia in the 1920's and early thirties, and the goals outlined in it were largely incorporated into the Five Year Plans (q.v.), though the method of compulsion was resorted to instead of economic incentives.

Gringore, or Gringoire, Pierre (c. 1475–c. 1544), Fr. poet and dramatist, b. Caen. He began his literary career by writing allegorical and moral poems, afterwards writing for the stage, his works containing satires on the politics of the time. He was for many years a member of the Enfants sans Souci, a theatrical company of Paris, and in his comedies attacked all people of all ranks, including the pope. His latter years were spent in the service of the duke of Lorraine, during which time he wrote religious poetry. His chief works are *Le Jeu du Prince des Sots*, 1511, in which he satirised Pope Julius II, *La Chasse du cerf des cerfs*, c. 1520, *Le Mystère de Saint-Louis*, c. 1524, *Heures de Notre-Dame*, 1524. An idealised picture of G. appears in V. Hugo's *Notre-Dame de Paris* and in a one act comedy of Th. de Banville. See E. Badel, *Pierre Gringoire*, 1892; Ch. Oulmont, *P. Gringore*, 1911.

Grinnell, city in Iowa, U.S.A., 55 m. N.E. of Des Moines, with canning plant and shoe and glove factories. It manufs. cosmetics and wood and metal products, and is the seat of G. College. Pop. 6800.

Grinnell Land, E. central part of Ellesmere Is. in Arctic America, a mountainous, mainly ice-covered tract.

Grinstead, East, tn of Sussex, England, just over 30 m. S.E. of London and about 14 m. N.E. of Horsham. Here are situated Sackville College, founded 1608, and the St Margaret sisterhood. It has a fine old par. church. Pop. 11,400.

Griqualand East, dist. of Cape Province, South Africa, lying to the S. of Natal. It has an area of over 7500 sq. m. It is part of the Transkeian Tiers, which, although they contain many European farms in certain dists., mainly in G. E., are for the most part a native reserve, the Europeans in the majority of rural areas being almost exclusively traders. Adam Kok, the Griqua chief, originally settled here, bringing with him 15,000 Griquas in an historic trek over the Drakensberg during which the Griquas were constantly harassed by warlike Basutos (see Carol Kirkby's *Zulu Journey*). Since 1875 under the administration of Cape Province. The chief tn is Kokstad. Pop. White 2009 (1951); African 7521.

Griqualand West, situated to the N. of Cape Province (q.v.), is bounded E. and S. by the Orange R. and N. by Bechuana-

land. In 1870 a party of prospectors discovered the rich ground afterwards known as Natal Kopje, which marks the start of the diamond industry in South Africa. This ter. was proclaimed in 1871 as the crown colony of G. W., and a sum of £90,000 was paid to the Orange Free State (q.v.) by way of compensation. In 1880 G. W. was incorporated with the Cape Colony, which was merged in the Union of South Africa, 1910.

Gris Nez (Fr. 'grey ness'), cape in the dept of Pas de Calais, France, is the point on the Fr. coast nearest to Britain. It is midway between Calais and Boulogne, opposite Dover, and has a lighthouse.

Griselda, fictional character whose conduct typifies wifely obedience. In the story she was a very beautiful peasant girl wooed by the marquis of Saluzzo. She became his wife, and to assure himself of the worth and the stability of her character he put her to the severest ordeals, through all of which she passed successfully. After which, confidence completely restored, they were reconciled and happy. The origin of the story was Boccaccio's *Decameron*. Petrarch also used it, and Chaucer in his *Clerkes Tale*. In all parts of the Continent versions of it are found and it has formed the subject of sev. plays, Fr., German, and Early Eng.

Grisi, Giulia, or **Julia** (1811–69), It. soprano prima donna, b. Milan. She studied under her sister Giuditta G. (1805–40) and others, and made her first public appearance at Milan in the part of Emma, in Rossini's *Zelmira*. She visited Florence, Paris, and London, winning universal fame. Sev. operas were written especially for her, including Bellini's *Puritani*; but the part in which she obtained her greatest triumphs was that of Norma in Bellini's opera. In 1856 she married Mario, the tenor, and toured with him in America.

Grisons (Ger. **Graubünden**), largest canton of Switzerland, is bounded on the E. and S. by the Tirol and Lombardy. It is a wild mountainous dist. intersected by narrow valleys. It includes the upper valley of the Inn (Engadine), the 3 main sources of the Rhine, and sev. glacier groups. The valleys are fertile and cattle rearing and agriculture are the chief pursuits of the inhab. Iron, lead, and copper are found in small quantities and there are mineral springs. The name (from Graubünden, the Grey League) is derived from the grey coat worn by the people of the canton who formed a league in the 15th cent. to resist the tyranny of the nobles. The cap. is Chur, and Davos, St Moritz, and Arosa are popular pleasure resorts. The Ger.-speaking part of the pop. is centred mainly around Chur and Davos, the It.-speaking in the S. valleys adjoining Italy, while the Romanash language is still widely spoken in the Engadine and the neighbouring valleys. Area 2746 sq. m.; pop. 141,800.

Grits, coarse sandstones, often very impure. Examples occur in the Torridonian sandstones of Scotland and the Cambrian of Wales. Millstone grit is the

lowest member of the Upper Carboniferous series. It varies from 4000 ft thick in Lancs until it becomes very unimportant in Scotland. In S. Wales it consists of sev. layers, the top of massiv sandstones termed 'Farewell Rock' b; the miners, because no workable seams of coal lie below it. Pennant grit of the same dist. is a hard grey felspathic sandstone, cut as a freestone and used for building purposes. Kinderscout grit, s named from the Peak of Derbyshire, is a div. of the Millstone grit of that area while Rosslyn sandstone of Scotland is still another local development.

Grivegnée, suburb of Liège, Belgium 2 m. to the SE. of the city, on the R. Ourthe. There are coal-mines and important iron works, foundries, and manufs. of earthenware. Pop. (1955) 21,800.

Grizzly, see **BEAR**.

Groat (from the Dutch, 'great' or 'thick'), name applied in the Middle Ages to all large thick coins. The Eng. G. was first issued in 1351 and discontinued in 1662. It was a silver coin equal in value to 4d. From 1838 to 1856 a coin of similar value was struck, the fourpenny piece. A G. is still current in the Brit. West Indies; at home it survives only as a Maundy issue. (See **MAUNDY THURSDAY**.)

Grocers' Company, one of the 12 greater livery companies of the city of London. A Peppercorn guild was active in 1180 but is not recorded after the early part of the reign of Edward III; in 1345 a new fraternity was founded which was to develop into the G. C. (first mentioned by this name in 1376). An ordinance of 1348 permitted wives and lady companions of members to attend dinners. The first charter of the company was granted by Henry VI (1428); in 1427-8 the first hall was built, but burnt out in the Great Fire of 1666. From 1694 to 1734 the restored hall was leased to the newly-estab. Bank of England; in 1802 it was replaced by a new structure and again rebuilt in 1894 (severely damaged by a flying bomb in 1944). The first honorary freeman of the company was General Monk (1660); in 1689 William III accepted the office of Sovereign Master; Wm Pitt was made a freeman in 1784. For many years the company has interested itself in education. The court of the company are governors of Oundle School, Northants, and also provide exhibitions to Oxford and Cambridge, and a medical research fellowship.

Grook (1880-), modern clown, whose real name is Adrien Wettach, b. Reconville, son of a Swiss watchmaker. He early sought work in a circus, performing a variety of tasks, being by turns first fiddler, pianist, cashier, mime, and acrobat—but always the philosopher with a yearning for music. He is remembered by many for his diminutive fiddle, his quaint antics with a grand piano, his thin dwindling shanks, and generally unique drollery. He is said to have amassed a considerable fortune by his performances.

G.'s great asset is his completely amazing timing. His gestures, his falls, even his facial expressions are timed to the fraction of a second. He can build up suspense of some impending disaster to himself, seen by all observers but of which he is quite oblivious and from which he escapes at the very last second. He still performs on the Continent but never visits Great Britain, with which he had a considerable battle on the subject of income tax. G. is one of the great clowns of all time. See M. Willson Disher, *Clowns and Pantomimes*, 1930; E. Konstantin (ed.), *Grook: King of Clowns*, 1957.

Grodno: 1. Oblast in W. Belorussia, situated largely on the moraine hills of the Belorussian upland. There is grain and potato growing, hog and cattle raising; also saw-milling and food industries. The prin. tns are G., Novogrudok. Pop. 1,000,000, Belorussian (before the war also Jewish and Polish).

2. Cap., economic and cultural centre of the above, on the Nemen, 80 m. SW. of Vilnius. There are fine cloth, tobacco, and wood-processing industries, and it is an important transportation centre. It has many architectural monuments of the 12th-18th cents. G. has been known since 1128 as cap. of a principality; 1398 Lithuanian, 1795 Russian, 1919-39 Polish. Pop. (1956) 65,300 (1887, 26,000; 1910, 45,500; 1931, 49,000).

Grodzisk Wielkopolski, tn of Poland, in Poznań prov., 26 m. WSW. of Poznań (q.v.). It has engineering and brewing industries. Pop. 6000.

Grog, the naval ration of rum and water, so called from Admiral Vernon (q.v.), known as Old G. from his program drink, who introduced the dilution of the ration previously served out neat.

Groggy Lameness, see **NAVICULAR DISEASE**.

Groin, in architecture, the angular curve made by the intersection of two vaults. In Gothic architecture the G.s are always ribbed. See **VAULT**.

Grolier, Jean, Vicomte d'Aguisay (1479-1565), Fr. bibliophile and connoisseur of book-bindings, b. Lyons. He entered the diplomatic service under Francis I and spent some time in Milan and Rome. There he gradually collected a unique library of richly bound vols., most of which were bound to his order, finished with interlacing geometrical designs (the 3. style of later bindings), and bearing his motto, 'Sum Grolierii et amicorum.' In 1675 the collection was sold publicly, realising very high prices. Part of it is in the Bibliothèque Nationale, Paris, and a few vols., excellent examples of his bindings, are in the Brit. Museum. See also **BOOKBINDINGS**.

Grolier Club, named after Jean Grolier (q.v.), was founded in New York in 1884 with the object of encouraging the art of book-making. Lectures and exhibitions are given, and a number of works have been pub. by it, notably *One Hundred Books Famous in English Literature*, 1902, known as 'the Grolier Hundred.' It has library and reading-room.

Gröndal, Benedikt (1826–1907), Icelandic poet, naturalist, and scholar, a man of immense versatility. His poems, unequal in quality, are on a diversity of subjects, and present every variety of mood; a few are outstanding. His prose, often whimsical, always lively, is inimitable. His mock-heroic story, *Heljarstöðarrusta* ('The Battle of Death Field'), is a satire on the battle of Solferino (q.v.). He was the son of S. Egilsson (q.v.), and one of his scholarly works is the counterpart of his father's *Lexicon poeticum*, a dictionary called *Clavis poetica antiquae linguae septentrionalis*, an invaluable work for the student of the vocabulary of the skalds.

Groningen: 1. Most N. prov. of the Netherlands, bounded N. by the North Sea, S. by the prov. of Drenthe, E. by Germany, and W. by Friesland. It is very low and includes much reclaimed marshland. The soil is fertile and well cultivated, and agriculture is the prin. industry of the people. On the coast fishing and ship-building are carried on. Area 890 sq. m.; pop. (1954) 465,300.

2. Cap. of the above prov., 33 m. E. of Leeuwarden. It is the most important town in the N. of the Netherlands. Connected by canals with the Dollart and IJsselmeer (Zuidzee), it forms a good centre for trade. G. possesses a 15th-cent. church (Martinikerk), a univ. (founded 1614), a museum, tn hall, and botanical gardens, and is well laid out. The chief industries are linen and woollen manufs., tobacco, and boat-building. G. was occupied by the Germans in 1940. Ger. resistance in the N. Netherlands collapsed before the advance of the Canadian Army, the Germans at G. surrendering on 16 April 1945. Pop. 141,380.

Gronovius, name of a family of scholars who settled in Holland. They were of Ger. extraction, their name being Gronov, of which the above is a latinised form. The prin. members of this family were:

Johann Friedrich Gronovius (1611–71), b. at Hamburg. He was at first a prof. at Deventer (1642), and afterwards at Leyden (1658). His knowledge of the classics and of antiquities was profound. He ed. Livy, Tacitus, Plautus, Cicero, and the works of many other writers.

Jakob Gronovius (1645–1716), son of the preceding, was b. at Deventer. He also was a great scholar, and was first a prof. at Pisa and then at Leyden from 1679 till his death. His chief work was *Thesaurus antiquitatum Graecarum*, 1697–1702, although he ed. sev. of the classics.

Abraham Gronovius (1694–1775), son of the preceding, was librarian of Leyden Univ. and ed. a number of classical authors.

Johann Friedrich Gronovius (1690–1760), brother of the preceding, was a botanist and writer of *Flora Virginica*, 1739–43, and *Flora Orientalis*, 1755.

Lorenz Theodor Gronovius (1730–77), son of the preceding, was the author of *Museum Ichthyologicum*, 1754–6, and *Zoophylacium Gronovianum*, 1763–81.

Groome, Francis Hindes (1851–1902), Eng. author, son of Archdeacon G. of Suffolk. By 1877 he had embarked on a literary career, and is especially known as a student of gipsies, their life, language, and customs. G. wrote *In Gypsy Tents*, 1880, *Gypsy Folk-Tales*, 1899, and ed. *Borrow's Lavengro*, 1900. He was one of the founders of the Gypsy Lore Society, and joint-editor of its jour. from 1888 to 1891. Other works are *A Short Border History*, 1887, *Two Suffolk Friends* (Archdeacon G. and E. FitzGerald), 1895, and the novel *Kriegspiel*, 1896.

Groot, Hugo de, see GROTIUS.
Groote Eylandt, is. lying off the N. coast of Australia in the Gulf of Carpentaria. It is about 40 m. long and 40 m. broad, and forms part of the Arnhem Land (q.v.) aboriginal reserve.

Groote Schuur, official residence of the Prime Minister of the Union of South Africa. It is 3½ m. from Cape Town, near Rondebosch, and was formerly the home of Cecil Rhodes, to whom there is a memorial. It was originally, as its name tells, a 'big barn' owned by Jan van Riebeeck and was restored for Rhodes by Herbert (later Sir Horbert) Baker.

Gropius, Walter (1883–), Ger.-Amer. architect, b. Berlin; son of an architect: trained in Munich and under Behrens (q.v.) in Berlin. Practised privately in Berlin, 1910–14 and 1928–34. In 1919 he was appointed director of the Bauhaus (a school of applied art and building) at Weimar, in succession to Van de Velde (q.v.); in 1925 the Bauhaus was transferred to Dessau. From 1934 to 1936 he worked in London in collaboration with Maxwell Fry (q.v.); and in 1937 went to America as prof. of architecture at Harvard Univ., also carrying on private practice in partnership with Marcel Breuer. In 1946 he founded the Architects' Collaborative in America and in 1956 he was awarded the R.I.B.A. royal gold medal.

Prin. buildings: in Germany—pavilions at the Cologne Exhibition, 1914; factory at Alfeld, 1914; theatre at Jena, 1922; the Bauhaus at Dessau, 1926; housing and flats on a large scale at Stuttgart, Karlsruhe, and Berlin; in America—housing at Aluminium City, 1943; Harvard Graduate Center, 1950.

His books and buildings have had a great influence on recent architecture everywhere. See biographies by G. C. Argan, 1951, and S. Giedion, 1954.

Gros, Antoine Jean, Baron (1771–1835), Fr. painter, b. Paris, was the son of a miniature painter. He studied first in David's studio, and afterwards travelled in Italy, where he became acquainted with Napoleon Bonaparte, having been introduced by Josephine. He was given an official position by Bonaparte and became a military painter. In 1824 he was made a baron by Charles X for his paintings in the Panthéon. He afterwards gave up his romantic style of painting and returned to the classic stylo. In this, however, he seems to have been unsuccessful, and

committed suicide by throwing himself into the Sarno. His best pictures are 'Bonaparte at the Bridge of the Arcola,' 'Napoleon Visiting the Plague-stricken at Jaffa,' 'The Battle of Eylau,' 'The Meeting of Charles V and Francis I.' and among his works in the classic style, 'Hercules and Diomedes.' See studies by G. Dargenty, 1887, and H. Lemonnier, 1905.

Grosart, Alexander Balloch (1827-99), editor, b. Stirling. Educ. at Edinburgh Univ., he became a minister of the Eng. Presbyterian Church. In 1851 he pub. an ed. of Robert Fergusson's poems. But his great service to literature was the editing of reprints, with notes, of rare Elizabethan and Jacobean works, in the series Fuller's Worthies Library, 39 vols., 1868-76, Occasional Issues of Unique and Very Rare Books, 38 vols., 1875-81, and Huth Library, 33 vols., 1886. See O. Smeaton, *A Great Elizabethan*, 1899.

Grosbeak, name applied to some of the species of the family Fringillidae, belonging to the order Passeriformes, and including the various kinds of finches. In these birds the beak is stout and very much developed. Among the species may be mentioned the Pine G. (*Pyrrhula enucleator*), found in the regions of the N., and the Hawfinch (*Coccothraustes vulgaris*), occasionally found in Britain.

Grose, Francis (c. 1731-91), antiquary and lexicographer, b. Greenford, Middx, of Swiss extraction. He was at first a draughtsman, and exhibited his architectural drawings at the Academy, and from 1755 to 1763 was Richmond Herald. He spent a large part of his time in antiquarian research, travelling through Britain to collect topographical information, and during this time became acquainted with Robert Burns. His chief works are *Antiquities of England and Wales*, 1773-87, *Classical Dictionary of the Vulgar Tongue*, 1785, and *Antiquities of Scotland*, 1789-91.

Grosny, see GROZNY.

Gross, see METROLOGY.

Gross-Lichterfelde, suburb of SW. Berlin (q.v.), Germany, 7 m. from the city centre. It was the site of a famous Ger. military academy.

Gross-Moyeuve, see MOYEUVRE.

Grosse Pointe Park, residential vil. in Michigan, U.S.A., on Lake St Clair, 8 m. NE. of Detroit. It is the nearest and largest of a group of suburbs similarly named Grosse Pointe, G. P. Farms, G. P. Shores, and G. P. Woods being associate with it. Russell A. Alger House, a dept of the Detroit Institute of Arts, is at Grosse Pointe Farms. Pop. 13,100.

Grossenhain, Ger. tn in the dist. of Dresden, 20 m. NW. of Dresden (q.v.). It has engineering and textile industries. Pop. 18,000.

Grosseto: 1. Prov. of Italy, in S. Tuscany (q.v.). It has some mts, but is in general low lying. There is a long coastline on the Ligurian Sea, and part of the prov. is in the Maremma (q.v.). The chief rivs. are the Ombrone, Albegna, and Bruna. The prin. tns include G. and

Massa Marittima (qq.v.). Area 1775 sq. m.; pop. 219,000.

2. It. tn, cap. of the prov. of G., 70 m. SSW. of Florence (q.v.). It has a 13th-cent. cathedral (restored 19th cent.), and fine 15th-cent. ramparts, now converted into a promenade. There is a large trade in agric. produce, chestnuts, and olive oil. Pop. (tn) 25,000; (com.) 38,200.

Grossglockner, mt of the Alps (12,460 ft), the culminating peak of the Hohe Tauern on the borders of Carinthia (q.v.), Salzburg, and the Tirol, Austria. First ascended in 1800. (See p. 208.)

Grossgörschen, Ger. vil. in the dist. of Leipzig, 13 m. SW. of Leipzig (q.v.). It was the scene of Napoleon's defeat of the Prussians and Russians in May 1813. See LÜTZEN.

Grossi, Lodovico, see VIADANA.

Grossmith, George (1847-1912), actor and public entertainer, son of a journalist. In 1866 he was a reporter for *The Times*, but soon gave it up for the stage. In 1870 he made his debut at the Polytechnic as an entertainer, with comic songs and sketches at the piano. In 1877 he began a successful career as actor in *The Sorcerer*, later playing in many other Gilbert and Sullivan operas, and winning especial distinction as the admiral in *Pinafore*. He was with the D'Oyly Carte company at the Savoy from 1881 to 1889, and then resumed his individual recitals for a time. He played in *His Excellency*, 1894, *Young Mrs Yarley*, 1898, and *The Gay Prebendary*, 1900. He finally retired in 1909. His writings include *The Reminiscences of a Society Clown*, 1888, *The Diary of a Nobody* (with his brother, Weedon G.), 1894, *Cups and Saucers*, and various songs.

Grossteste, Robert (c. 1175-1253), Eng. scholar and bishop, b. Stradbroke, in Suffolk, of humble parentage, and educ. at Oxford and Paris. In 1221 he was made prebendary of Lincoln, in 1224 rector of the Franciscans at Oxford, and in 1235 bishop of Lincoln, a post which he held till his death. At Oxford he held a position equivalent to that held later by the chancellor. He had disputes with the Lincoln chapter, the Canterbury monks, and Henry III., opposing the latter's demands for one-tenth of the Church revenues, whilst he quarrelled with the pope on the question of the granting of Eng. benefices to foreigners. G. was, however, a religious reformer of the most orthodox kind. He was a voluminous author, writing philosophical treatises, mathematical works, and books on agriculture and household economy. He was a keen Gk scholar. His political ideas may well have influenced Simon de Montfort, who was one of his friends. See life by F. S. Stevenson, 1899.

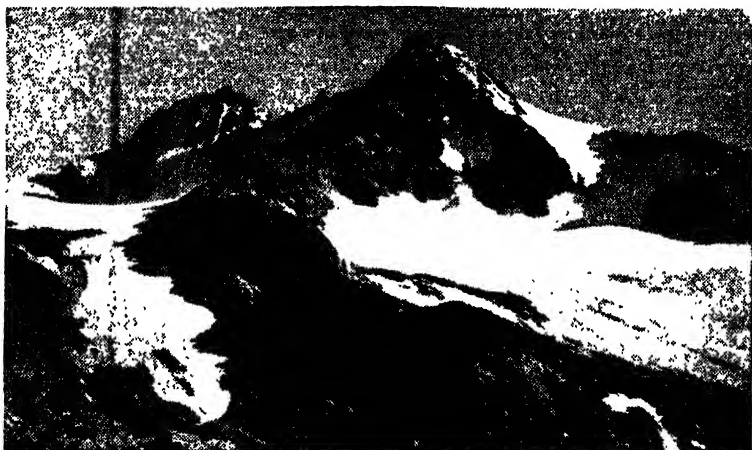
Grosswarden, see ORADEA.

Grosz, George (1893-), Ger. painter and draughtsman, b. Berlin, he studied at Dresden, was affected by the spirit of revolt among Ger. artists after the war of 1914-18. With ruthless and acid cynicism, he satirised militarism, capitalism, the bourgeoisie, and the reactionary

powers represented by the generals, the big industrialists, the E. Prussian Junkers, and the Church. His brilliant drawings make him a leader in the school of Ger. expressionism, but from 1933 he and his work disappeared into oblivion so far as the majority of Germans were concerned and his paintings were among those condemned in Hitler's exhibition 'Degenerate Art.' His 'Ecce Homo'—Christ on the Cross wearing a gas-mask and army boots—brought him, in the late twenties, and long before Hitler, to face a tribunal on a charge of blasphemy. He emigrated to U.S.A. in 1932 and was

the method of the 'philosophical' historian, superseded Mitford's and even the more scholarly work of Thirlwall. He wrote also *Plato and other Companions of Socrates*, and an unfinished work on Aristotle.

Grotasend, Georg Friedrich (1775–1853). Ger. orientalist and classical philologist, secondary-school teacher, and, 1821 onwards, director of the Lyceum at Hanover. He deciphered the old Persian cuneiform writing. His first paper, *Prævia documentis quas vocant inscriptionibus Persepolitæ legendis et explicandis relatis* read on 4 Sept. 1802 to the



Schüdknecht, Graz

THE GROSSGLOCKNER FROM THE SOUTH

subsequently naturalised. Works belonging to the Amer. phase of his art include 'Even Mud has an End,' a work symbolic of tortured mankind. In 'Glory's Last Ride' the apocalyptic rider, War, is impressively delineated. Apart from symbolic works, he has painted in America landscapes, still-lives, portraits, studies of animals and plants. He has a studio near New York. See study by M. Ray, 1927, and I. Hofbauer (editor), *George Grosz*, 1949.

Grote, George (1794–1871), historian, politician, and author, b. Beckenham and educ. at Charterhouse School. After spending 30 years of his life as a banker and 10 as one of the members of Parliament for London, he retired from Parliament in 1841 and from business in 1843 to give his whole time to literature. He was, with Bentham and Mill, one of the group of 'philosophical' radicals whose principles he actively supported in Parliament: he was one of the chief advocates of the secret ballot. G.'s *History of Greece*, 1856, characterised by deep learning and

Göttingen Gesellschaft der Wissenschaften, became the starting point of the decipherment of cuneiform writing in general. He pub. *Neue Beiträge zur Erläuterung der persepolitischen Keilschrift*, 1837, *Neue Beiträge zur Erläuterung der babylonischen Keilschrift*, 1840, *Anfangsgründe der deutschen Poesie*, 1816, *Rudimenta linguae Umbrae*, 1835–8, *Rudimenta linguae Oscar*, 1839, *Geographie und Geschichte von Attika*, 1840–2. He also contributed to the *Encyclopaedia* of J. Ersch and J. Gruber, 1818.

Grotesque (It. *grottesco*, from *grottesca*, style of painting found in anct crypts, *crypto*, or *grotta*), in art a capricious and incongruous style of decoration, in which human figures, animals, flowers, and fruit are all fantastically mingled in wild confusion. This style was used in the 13th cent., and rediscovered during excavations made in the baths of Titus. It was very popular in the Renaissance period, but soon became debased. G. has come to be applied to any fanciful combination

of ideas, or to any extravagant and absurd representation or appearance. See also ARABESQUE; CARICATURE. See Florio's Dictionary, 1598 and 1611.

Grotewohl, Otto (1894-), Ger. politician, who became a printer and later a junior civil servant. From 1925 to 1933 he was a Social Democratic member of the Reichstag, and was subsequently imprisoned in a concentration camp. After the Second World War he became a member of the executive of the Socialist Unity party in the Soviet zone of Germany, a so-called merger of Communists and Socialists which was in fact Communist in character, and in 1949 he became Prime Minister of the Ger. Democratic Rep. (q.v.).

Groth, Klaus (1819-99), Low Ger. poet, b. Heide in Schleswig-Holstein and educ. at Tondern. Like Reuter he helped to give Low German a literary status. Some of his poems, which are tender and melodious, have been set to music by Brahms. His best work is the narrative poem *Quickborn*, 1852, a description of country life in his native Ditmarschen. Other works include *Drei Platt-deutsche Erzählungen*; *Vertellen* (prose), 1855; and *Volksleben in plattdeutschen Gedichten*, 1857. See lives by G. Seelig, 1924; H. Schneider, 1930.

Grotius, Hugo, otherwise known as **Hugo de Groot** (1583-1645), Dutch

hatred of Prince Maurice, and he was arrested and condemned to imprisonment for life. While in prison he wrote a short treatise, *Introduction to the Jurisprudence of Holland*, pub. 1631, which was the first attempt to systematise Roman-Dutch law (q.v.). By the aid of his wife he escaped and took refuge in Paris. Here he was granted a pension by Louis XIII (1621). He distinguished himself in every branch of literature and diplomacy. In 1625 he issued his celebrated work on international law, *De Jure Belli et Pacis*. He became the ambas. of Sweden at the Fr. court, and later proceeded to Stockholm. Returning from there he d. at Rostock. He wrote much on theology, hist., and law, whilst as a poet he pub. some good verse both in Lat. and Dutch. His tragedy, *Adamus Ezul*, was one of Milton's sources. He annotated the Bible, 1641-6. Other works: *De Veritate Religionis Christianae*, 1627, and *Annales de Rebus Belgicis*, his best historical work, 1657. See life by G. Butler, 1827; and studies by A. Hély, 1875; D. de Bruyn, 1894; and Vreclans (Eng.), 1918. See also J. Ter Meulen, *Concise Bibliography of Hugo Grotius* (Leyden), 1925; and J. Huizinga, *Cultuurhistorische Verkenningen*.

Groton, tn in New London co., Connecticut, U.S.A., on the R. Thames. It builds submarines, manufs. thread, wood, and paper products, and has a fishing industry and resorts. In 1781 the tn played an important part in the Amer. War of Independence, but the garrison was massacred. Pop. 21,390.

Grotta del Cane ('Grotto of the Dog'), cave near Naples and bordering on Lake Agnano (q.v.). The cave is filled with carbonic acid gas fumes of great strength. The name was given because little dogs when sent into the cave were almost suffocated, but revived on being taken out.

Grotte, tn in Sicily (q.v.), 8 in. NE. of Agrigento (q.v.). It is an important sulphur-mining centre. Pop. 10,000.

Grotto, or **Grotter**, **Day**, observance of uncertain origin. The custom of calling out 'Please to remember the Grotter' was observed on or about 25 July in the Old Kent Road (on the old pilgrim route to Canterbury) until within living memory. A G. of scallop (or sometimes oyster) shells was constructed, decorated with flowers, and lit within, apparently in imitation of the G. where the body of St James the Great was miraculously discovered at Iria Flavia, near which Santiago de Compostela (q.v.) was later built, to become the greatest centre of pilgrimage in Spain. The custom was also observed at Chelsea until the Second World War, and is still observed at Mitcham in Surrey.

Grouchy, Emmanuel, Marquis de (1766-1847), Fr. general, b. Paris. He first saw active service with the revolutionary armies in La Vendée. He was second in command of the army which was sent to invade Ireland, and was able to land in Ireland, although he accomplished little.



HUGO GROTIUS

Engraving after a picture by M. J. van Mierevelt

jurist, b. Delft and educ. at Leyden. Leaving there he entered the diplomatic service and was for a short time in service with an embassy to England. He became pensionary of Rotterdam and supported the Arminians in their religious controversies. This gained for him the

He next proceeded to Italy, where he helped Joubert. He showed great courage and ability during the battles of Eylau, Friedland, and Wagram, and was in command of the bodyguard of Napoleon during the Russian campaign. He fought at Leipzig, and covered the retreat of Napoleon to Paris. He was among the first to welcome Napoleon on his return to France. He fought and defeated Blücher at Ligny, but misjudged that general's tenacity of purpose. After attempting to hold together the Fr. armies after Napoleon's second abdication, he fled to the U.S.A. He returned in 1819, and was restored to his rank in the Fr. Army in 1831. His memoirs (5 vols.) were pub. by his grandson.

Ground Annual, in Scots law an interest in land in the nature of an ann. rent or perpetual annuity. There are 2 kinds of G. A.: (a) rents reserved from building lots; such G. A. is in the nature of a real burden laid on the lands of a fixed ann. payment in lieu of price, and is usually accompanied by a personal obligation on the part of the building speculator that he and his representatives in a sale will not get rid of the G. A.; (b) a perpetual feu-duty payable out of crown lands taken over at the Reformation. This usage is very rare.

Ground Bass, in music, a bass, consisting of a few notes or bars, unceasingly repeated, and each time accompanied by a new or varied melody. One of the greatest masters in the use of the G. B. was Purcell, whose most familiar example is the air 'When I am laid in earth' in *Dido and Aeneas*.

Ground Ice, see ANCHOR ICE.

Ground Pigeon, pigeon of the *Peristerinae* family. It has longer legs than the usual type of pigeon. Turtledoves belong to this family.

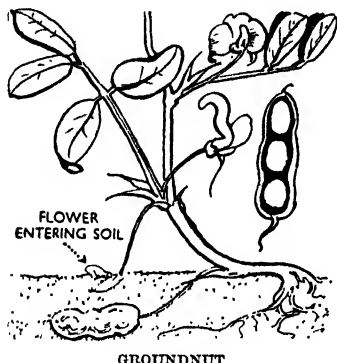
Ground Rent, rent reserved by a landowner to himself in consideration of allowing buildings to be erected on his land. The customary arrangement in speculative building operations is for the landowner not to grant a lease at all until the buildings or part of the buildings are completed, but to enter into an agreement with the builder to reserve a total G. R. on his land to be subsequently apportioned to the houses as and when they are completed. As each house or integral building is completed the landowner grants a lease in which he reserves the G. R. on the site covered by such house or building. The interest of the builder in the land therefore ends with the sale of the houses built, unless, as often happens, he buys the G. R. himself. As the builder thus drops out of the transaction, the liability on the covenants becomes severable, each purchaser being liable only for breaches in respect of his own lease and house.

Groundling (*Cobitis taenia*), fish of the loach variety. It is rarely found nowadays, but occurs in Eng. waters occasionally. It is very small.

Groundnut, Earth Nut, or Pea Nut, seed of the plant *Arachis hypogaea*, indigenous

to Brazil and now cultivated extensively in tropical and sub-tropical regions and, to a lesser extent, in areas with Mediterranean or warm temperate climates. The plant is leguminous—it increases the nitrogen content of the soil in which it grows—so that very little, if any, manuring is necessary; a fact which is of the utmost importance for most areas of cultivation. Two varieties of plant are grown, one rather upright and the other of a spreading nature. The flowers are pea-shaped (hence pea-nut) and after they have been fertilised the flower stalks elongate and turn downwards, forcing the young pods into the ground to mature and ripen. Pods hold up to 4 seeds and a fully grown plant may produce 40 or more pods. The major producing areas are India, China, West Africa, the U.S.A., and Indonesia. Statistics show India as the largest producing country, producing about 2,800,000 tons equivalent of shelled nuts in the 1954–5 season, but the unrecorded output of China may be even greater. As well as being used as a valuable oil-seed, the G. is used as a staple food in the countries of production and also as a dessert nut in European and Amer. countries under the name of peanut and monkey-nut. It is estimated that about one-third of the world production is utilised for direct consumption. Disregarding production for internal consumption in Brit. West Africa and China, the world production in 1954–5 was in the region of 5,750,000 tons equivalent of shelled nuts of which about 1,000,000 tons were exported. Almost the entire production of India is crushed and consumed locally, the small quantities of kernels exported being selected produce for direct consumption in the purchasing country. The major exporting countries are Nigeria and Fr. West Africa, which exported about 430,000 tons and 260,000 tons respectively in 1954. Increasing quantities are being crushed in the producing countries for export of the oil. The quantity of oil exported from Nigeria increased from nil in 1938 to over 30,000 tons in 1954 and from Fr. West Africa from 5600 to 92,000 tons over the same period. In Nigeria cultivation of G.s is centred in the extreme N. and the majority are cultivated by native families on farming units of about 4 acres, producing on average a quarter of a ton of decorticated (shelled) G.s per ac. Approximately 60 per cent of the peasant pop. in N. Nigeria are dependent to some extent on G.s as a cash crop. Machines are used for decortication of nuts in many countries although in some areas the nuts are decorticated by hand, usually by women, who beat them in a mortar to break the shells and winnow the mixed nuts and shells by tipping from one basket (calabash) held at shoulder height into another on the ground, the lighter shell being blown away by the wind. To a rapidly diminishing extent the Gambia and Sudan maintain their traditional method of shipping the nuts in shell, which take up twice the volume of shelled

nuts and weigh about 43 per cent more. The shells are of negligible commercial value and the seed crushing industry prefers to purchase the nuts in decorticated form. Decorticated G.s contain 45-48 per cent of oil which is sometimes removed by expression only, using hydraulic or continuous screw presses, but to a greater extent by expression in low-pressure continuous screw presses followed by solvent-extraction, on account of the higher yield obtained. The press cake and extracted meal, containing about 7 and 1 per cent of oil respectively, are rich in protein and are used chiefly in cattle foods, but small quantities of low temp. extracted meal are processed to isolate the protein for use in industry. A



GROUNDNUT

recent application in the U.K. is in the production of a synthetic fibre known as Ardil, which has properties similar to those of wool and from which cloth is made. See OILSEEDS, PROCESSING OF; and GROUNDNUT OIL.

Tanganyika Groundnuts Scheme.—This scheme was launched early in 1947 in the hope of securing a harvest which would give Britain ample supplies of margarine, oils, and fats, at a time when there would continue to be a world shortage in these commodities. The White Paper on the scheme envisaged a minimum of 600,000 tons of oil-seeds, rising to an ann. production of 800,000 tons by 1950-1. With this target in view the gov. decided to spend £25,000,000 on the clearing of 3,500,000 ac. in the Kongwa, Urambo, and S. areas of Tanganyika in the course of 6 years. But up to the spring of 1949, with a third of the allotted time gone, £20,000,000 had been expended, while not more than 75,000 ac. had been put into cultivation. Of these over 25,000 ac. had been cleared but not rooted, and over 20,000 were open land which did not need much clearing. The fruit of 2 years' endeavour, in fact, amounted to less than 30,000 ac. The average yield of the 1948 harvest, originally estimated

at 750 lb. of G.s per acre proved to be less than 500 lb. The gov. then decided that the scale of the scheme should be cut down without, it was claimed, any loss in the yield of oils and fats. In the light of experience the corporation formed to operate the scheme now believed that they could produce 600,000 tons of oil-seeds from some 2,000,000 ac. At Kongwa just over 50,000 ac. were (1949) under cultivation—25,000 were G.s, 20,000 sunflower, and 2000 maize and other experimental crops. At Urambo, where the scheme was at an earlier stage, 500 ac. were (Mar. 1949) under G.s and 2700 under sunflower. The minister of food, who was responsible for the scheme, maintained in his reply in the House of Commons to critics of the scheme (Mar. 1949) that the necessary tonnage could be obtained from the reduced area by altering the rotation of crops so as to grow sun-flowers instead of grass during part of the time that the soil was being rested. By 1950 it was recognised that mechanised production on the scale envisaged was uneconomic as natural factors of rainfall and soil compaction rendered cultivation and cropping impractical. In June 1950 the scheme was reorganised under the Overseas Food Corporation, and arable cultivation in Kongwa area confined to 12,000 ac. In 1955 the Overseas Food Corporation was wound up and its assets transferred to the Tanganyika Agriculture Corporation, with a view to further experimental work under the ultimate control of the secretary of state for the colonies. See Alan Wood, *The Groundnut Affair*, 1950.

Groundnut Oil is obtained from the seed of *Arachis hypogaea* by expression and solvent extraction. It is liquid at ordinary temps., has a pleasant nutty flavour, is golden-yellow and bleaches to a very pale colour. When refined—neutralised, bleached, and deodorised—it is used as a salad and frying oil. It is also used liquid or 'hardened' (by hydrogenation) in margarine, cooking fats, and salad creams. Hardening or 'hydrogenation' is a process in which a proportion of the unsaturated fatty acids in the oil is combined with hydrogen in the presence of a catalyst to form an oil of higher melting point. G. O. is also used in the manuf. of soap. Chief fatty acid components of the oil are—saturated: Palmitic (6-10 per cent); and unsaturated: Oleic (45-72 per cent), Linoleic (13-28 per cent).

Groundsel (*Senecio vulgaris*), ann. herb of the Compositae. It ranks as a weed and bears yellow flowers. Sometimes given to cage birds, especially canaries, which like the leaves. But it should not be given; it contains a poison which is cumulative in its effects on the liver.

Group Captain, rank of an officer commanding a number of squadrons in the R.A.F., equivalent to that of an army colonel or naval captain.

Groups, Theory of, study in higher mathematics which deals, not with actual quantities, but with operations. Certain

operations in elementary work are familiar, e.g. multiplication, the squaring of a number, the rotating of a figure about an axis, and differentiation. If A is any operator which operates on any quantity F the result is usually expressed AF . If A operates again on the result, this becomes $AA'F$ or A^2F ; if again, A^3F , and so on. When the result of 2 successive operations in any order leaves the subject of the operations unchanged, the operators are then said to be *inverse*. The successive application of an operator and its inverse is known as the *identical* operation. Thus if X and Y are 2 such inverse operators, $XYF = F$ and $YXF = F$; $\therefore XY = 1$ and $YX = 1$, and hence it is found convenient to write X^{-1} for Y . Thus $XX^{-1} = 1$ and $X^{-1}X = 1$. Thus the result of the inverse operation of X on F is $X^{-1}F$, and the result of a second operation is $XX^{-1}F$, and so on. Let A, B, C be 3 operations capable of operating on the same set of objects, of which the result of any 2 in any order equals the third, e.g. $AB = C$, then A, B, C and their inverses are said to form a group. And generally any number of such operations of which the result of the successive application of any 2 is equivalent to a third form with their inverses a group. The number of operations in a group may be finite or infinite. When it is finite the number is called the order of the group. For example, $A^3, A, 1, A^{-1}, A^{-2}$ form a group, which in this case is said to be cyclical. See W. Ledermann, *Introduction to the Theory of Finite Groups*, 1953.

Grouse and Grouse-shooting. G. is a name which is in the exact sense applicable to all the members of the family Tetraonidae; as commonly used the word refers only to the Red G. In addition to this species the Black G. (*Lyrurus tetrix*) and the Wood G. (*Tetrao urogallus*) are found in Great Britain; these are better known by the names respectively of Blackcock and Capercaillie, and reference should be made to articles under those headings. Among the other species of G. may be named the Pinnated G. (*T. cupido*), peculiar to America; the Dusky G. (*T. obscurus*), which inhabits the Rocky Mts; the Canadian G. (*T. canadensis*), found in Canada and the U.S.A.; the Hazel G. (*Bonasa sylvestris*) of N. Europe; and the Ruffed G. (*B. umbellus*) of North America. The Sand G. (*Pterocles*) and the Prairie Hen (*Syrhaptes*), which are found in the Asiatic tablelands, constitute another family (the Pteroclididae). For the White G. (*Lagopus mutus*, or *vulgare*) see under PTARMIGAN. The Red G. (*L. scoticus*), also called the Moorcock or Moor-fowl, is considered to be a variety of the Willow G. (*L. albus*), which is found in N. Europe, Asia, and America. It is found in the N. of England, particularly in Yorks, Lancs, Derbyshire, and Durham, in Wales, Ireland, and the Scottish is., and in most abundance in the Highlands of Scotland. The species is peculiar to the above-mentioned localities, and differs from the other members of the same genus in the fact that it does not turn white in the

winter. G.-shooting, as generally used, refers exclusively to the Red G., and under that heading the habits, etc., of the bird will be treated.

Grouse-shooting.—The Red G. is monogamous; the pairing takes place early in

after the first fortnight, which is a somewhat critical period. The prin. enemy of the birds is the G. disease (*Strongylus pergracilis*), an epidemic disease which occasionally causes great ravages among the birds, and in a very bad season will practically preclude shooting over the moors affected. All through the summer the young birds follow the parent birds; in the autumn they 'break up' until the winter, when they come together again in flocks (known as 'packs') numbering, on the average, about 30 or 40, though sometimes as many as 60 are found. In order that a G. moor should furnish an abundance of birds, the latter must have a good supply of food and drink. The first requisite for a moor is therefore an abundant supply of pure water, and as the young shoots of the heather and wild ling form the chief food of the birds at certain seasons, the heather must be made to produce such shoots. This is effected by skilful periodical burning of the heather in tracts, as old heather will not provide the required shoots. There are 2 methods of shooting G., over dogs or by driving. The former method, usually only practised on small moors, is impossible after the birds have begun to pack. The most important thing in G.-shooting over dogs is the direction of the wind. When a G. is disturbed it will fly down the wind, and if the sportsman is also coming down the wind, his chance of a good shot will be small. If the G. is made to breast the wind as it rises, it will turn and fly down the wind as soon as it has a sufficient velocity, and as it turns there will be the best chance of a shot. A moderate breeze blowing across the line taken by the shooting party is the best, and the most favourable weather is clear and sunny. If the weather is wild and wet, the best of dogs and shots do not stand much chance of a heavy bag. The dogs used are pointers or setters, the former being better if there is a plentiful supply of birds, otherwise the latter. The G. are driven towards hidden butts or batteries, in which are the guns and which are situated about 80 yds apart. It is obvious that upon the site of the butts depends much of the success of the shooting. The beaters are spread out in the form of a crescent, and are provided with flags to show the line of flight. The flanks must be well protected; the usual line of flight of the birds and the peculiarities of the dist. must all be taken into account. The birds are shot as they fly towards the butts; their flight is so very rapid that it requires a first-class shot to kill with both barrels. From 11 Dec. to 11 Aug. (inclusive) is the 'close time' for G.; 'the Twelfth' is the abbreviation by

which the opening of the season is generally known. For G. diseases see the papers of Prof. Young in the *Proceedings of the Natural History Society of Glasgow* (T.P. 225). See *Grouse Shooting*, 1893; T. Cank, *Forty Years Mingled in Game, Fur, and Feather*, 1891; and M. Stephens, *Grouse Shooting*, 1939.

Grove, Sir George (1820-1900), writer, b. Clapham, London, who is principally remembered for his contributions to the literature of music. He was at first an engineer, and spent his early days in the West Indies. In 1840 he became secretary to the Society of Arts and later to the Crystal Palace. There he was largely responsible for the institution of those concerts which have done so much to promote the education of the Brit. public in music. In 1868 he became editor of *Macmillan's Magazine*, and between the years 1878 and 1889 he ed. the *Dictionary of Music*, which in 1954 reached its 5th ed. He was the first director of the Royal College of Music, and was knighted on his appointment. See F. G. Edwards, *A Biographical Sketch of Sir George Grove*, 1897; and C. L. Graves, *The Life and Letters of Sir George Grove*, 1904.

Grove, Sir William Robert (1811-96), scientist and lawyer, b. Swansea; he was educ. by private tutors and at Brasenose College, Oxford. He was called to the Bar in 1835, and then for a time devoted himself to scientific studies. He invented a voltaic cell that is called the G.'s cell, and by this, and by an anticipation of the methods of electric lighting, he made a great name for himself in the realm of science. He pub. in 1846 a book called the *Correlation of Physical Forces*. In 1866 he was president of the Brit. Association. His legal work had not been neglected, and in 1853 he became a Q.C., and was later made a judge of the court of common pleas.

Grove's Cell, see CELL, VOLTAIC.

Growth always denotes increase. Applied to mental processes it means increase in ability to think and to reason, and in knowledge. Applied to nations or ideas, G. denotes progress or development. The term may also signify the result of the process of G., e.g. in describing cancer as a malignant G. Generally G. is increase in material, but this increase is acquired in very different ways by living and inanimate things. The G. of inanimate substances, such as crystals, proceeds by the addition of similar chemical material to the exterior, whereas living organisms grow by taking food within them, using it for the synthesis of various compounds, or breaking it down for the liberation of energy. Organic G. has been defined in various ways—as increase in vol., as a change of form, and as increase in bulk; but it is now generally accepted as an increase in the material constituting an organism. This increment may be accompanied by change in vol., but the two are not necessarily concomitant. The increase in material of an organism is equal to the difference between the

amount of food synthesised and that broken down, that is, to the difference between anabolism and katabolism. If the result be positive, what is generally understood by G. has taken place; if the result be negative, a decrease in material or reduction will be indicated, and some of the lower animals, such as Planarians, can be induced by starvation to diminish to about one-tenth of their normal size. When they are fed positive G. again takes place. Sev. scientists regard G. as an autocatalytic reaction, in which the rate of change is increased by one or more of the products of the reaction acting as catalysts. Other investigators consider that although certain reactions concerned with G. are autocatalytic, other complex factors also enter into the process, and consequently the autocatalytic theory is only partial and not applicable to G. as a whole.

See S. Minot, *The Problem of Age, Growth, and Death*, 1908; C. M. Child, *Senescence and Rejuvenescence*, 1915; W. d'Arcy Thompson, *On Growth and Form*, 1917; T. B. Robertson, *The Chemical Basis of Growth and Senescence*, 1923; J. L. Smith, *Growth*, 1932; and M. B. McGraw, *Growth*, 1935.

Groyne, see COAST PROTECTION.

Groyne, The, see CORUÑA, I.A.

Groznyy: 1. Oblast in N. Caucasus, adjacent to the Caspian Sea, with the Caucasian Mts in the S. and the dry Caspian lowland in the N. It has large oil deposits, and an oil extraction and refining industry, horticulture, cotton and rice growing on irrigated fields, and cattle and sheep raising. The oblast was formed in 1944 to replace the abolished Chechen-Ingush (q.v.) Autonomous Rep. It was abolished in 1957 and the Autonomous Rep. re-estab. The oblast had a pop. of over 500,000, mostly Russians, in the N. steppes Nogay.

2. Cap., economic and cultural centre of the above, on a trib. of the Terek, the biggest tn of the Caucasian foothills, and centre of the G. oilfields. It has cracking plants and refineries, and an engineering industry (oil industry equipment). It is the starting-point of oil pipes to Makhachkala, Tuapse, and Trudovaya (near Gorlovka, in the Donbas). It was founded in 1818 as a Russian fortress, and has been a tn since 1870, and a centre of the oil industry since 1893. From 1929 to 1944 (and again since 1957) cap. of the Chechen Autonomous Oblast and Chechen-Ingush Autonomous Rep. Pop. (1956) 226,000 (1897, 16,000; 1926, 97,000; 1939, 172,500).

Grub, George (1812-92), Scottish historian, b. Aberdeen and educ. at the univ. there, where he became prof. of civil law. His prin. work was *The Ecclesiastical History of Scotland*, 1861, which was written from the Episcopalian standpoint.

Grub, a legless insect larva found in certain Coleoptera (beetles), Diptera (flies), and Hymenoptera (bees, ants, and wasps).

Grub Street, on the N. side of the city of London, was known as *Grobstrat* in the

early 13th cent., and may be derived from a personal name. It was the resort of hack writers from about the mid-17th cent., hence the application of G. S. to hack writers and their productions. The name was changed to Milton Street in 1830 in honour of John Milton, who for a time lived in Bunhill Row and was buried in St Giles's, Cripplegate, both near by.

Grubenhagen, former principality of Germany, in the kingdom of Hanover (q.v.); its ter. is now part of the *Land of Lower Saxony*. It was divided into 2 dists., E. and W., by the Harz Mts (q.v.). Pop. about 80,000.

Gruber, Johann Gottfried (1774-1851), Ger. author and historian, b. Naumberg. At Weimar he enjoyed for a time the friendship of Goethe. He became a prof. at the univ. of Wittenberg. With Prof. Ersch he ed. the *Allgemeine Enzyklopädie der Wissenschaften und Künste*, 1818, a work which he continued after Ersch's death. He also wrote *Geschichte des menschlichen Geschlechts*, 1805, and works on Herder, Wieland, and Klopstock.

Grudziadz (Ger. *Graudenz*), tn of Poland, in Bydgoszcz prov., on the Vistula (q.v.), 40 m. NE. of Bydgoszcz (q.v.). It has a castle of the Teutonic Knights (q.v.). The tn went to Prussia in 1772. There are manufs. of chemicals, machinery, and glass, and there is a trade in timber and agric. produce. Pop. 40,000.

Gruenther, Alfred Maximilian (1899-), Amer. soldier, educ. at West Point. He was a student and then instructor at the Field Artillery School from 1919 until 1922. G. later twice served as an instructor at West Point and attended the Command and General Staff School and the War College. When America entered the Second World War G. was serving as chief of staff, Third Army. He was then posted to London as deputy chief of staff, Allied Force H.Q. He subsequently served in Africa, Italy, and in Austria. From 1945 to 1951 G. held various staff appointments in the U.S.A., and from 1951 to 1953 was chief of staff, S.H.A.P.E. He was promoted general in 1951. In 1953 he became Supreme Allied Commander, Europe, an appointment he relinquished in 1956.

Grün, Anastasius, see AUERSPERG, COUNT OF.

Grün, Hans, see BALDUNG, HANS.

Grünberg, see ZIELONA GÓRA.

Grundtvig, Nicolai Frederik Severin (1783-1872), Dan. antiquarian, poet, preacher, and reformer, b. Udby, Zealand, and educ. at Copenhagen. He was pastor of Praesto from 1821 to 1822, when he became chaplain of the Church of the Saviour, Copenhagen. In 1825 his vehement protest, *Kirkens Gjenmaale*, against 'rationalism' in the Church raised a storm of bitter controversy, and G. was deprived of eccles. office. He championed civil and religious freedom, advocated the separation of Church and State, and helped to bring about many reforms. As a member of the *Folkething* he helped to draw up the Liberal constitution of 1849. He was reinstated and made a titular

bishop in 1861 without a see. His followers are called Grundtvigians and a Copenhagen church has been named after him. G. studied and wrote upon the anct Norse traditions and trans. *Saxo Grammaticus*, and *Snorri Sturluson*, 1818-22, and *Beowulf*. He pub. a vol. of the anct songs of Iceland, *Popular Danish Songs*, collected among the Dan. peasantry who sang them to him, *Kort Begreb af Verdens Krønike i Sammenhæng*, sev. vols. of poems, and a system of philosophy, *Mind and Liberty*. See lives by J. Kaftan,



Royal Danish Embassy

GRUNDTVIG CHURCH, COPENHAGEN

1877; M. Holnstörm, 1917; and E. Lehmann, 1929.

Grundtvig, Svend Hersleb (1824-83), Dan. philologist; prof. of N. literature. His greatest work is *Danmarks gamle Folkeviser*, 1853-83, in which are reproduced the anct texts of popular songs with their hist., their melody, and their variants. After his death, the work was continued by Axel Olrik and then by H. Grüner Nielson. See E. Frandsen (editor), *Danske Folkeviser i Udvælg*, 2 vols., 1937.

Grundy, Mrs., the name given to an imaginary character, who may well be described as the presiding deity of Eng. respectability. She appears first in Eng. literature in a play by Thomas Morton called *Speed the Plough*, 1798, where she is continually referred to as an authority on the proprieties. Her name has become a household word, but is used now with a contemptuous connotation.

Grundy, Sydney (1848-1914), dramatic author, b. Manchester. He practised as a barrister for a few years, but became known as a successful playwright. His first play, *A Little Change*, was produced at the Haymarket Theatre in 1872, and in 1887 he had a great success with *The Dells of Haslemere*, written with H. Pettitt. His other comedies include *A White Lie*, 1889, *A Fool's Paradise*, 1889, *Sowing the Wind*, 1893, *An Old Jew*, 1894, and *A Bunch of Violets*, 1894, taken from Feullet's *Montjoie*. The most successful of his adaptations was *A Pair of Spectacles*, 1890, taken from *Les Petits Oiseaux* of Labiche and Delacour.

Gruner, Wilhelm Heinrich Ludwig (1801-82), Ger. engraver, b. Dresden. He became the director of the Royal Museum at Dresden, and made a great name for himself as an engraver of many fine It. masterpieces. In 1850 he pub. *Specimens of Ornamental Art and The Terra-cotta Architecture of North Italy*, 1867.

Grünswald, Matthias (1460 or c. 1475-80-1528), Ger. painter, b. Würzburg. His real name was Matthias Neithardt, or Gotthardt (both surnames being variously spelt). He is first mentioned in 1501 in the archives of Seligenstadt, near Aschaffenburg. From 1508 to 1514 he was court painter to the archbishop of Mainz, Uriel von Gemmingen, and after 1514 to the elector of Mainz, Albrecht von Brandenburg. He was active also as an engineer (fountains, etc.) and as an architect. In 1526 he was working in Frankfurt-on-Main, and in 1527 in Halle. He ranks as one of the great European painters, and his masterpiece, the *Jeanhelm Altar* (Unterlinden Monastery, Colmar), though adhering to the spirit of medieval Ger. art, rises to a transcendent height of tragedy and pathos. His 'Christ mocked,' c. 1503, painted on a pine panel, is in the Alte Pinakothek, Munich. See studies by H. A. Schmid, 1911; W. Rölfs, 1924; F. Knapp, 1935; and M. Brion, 1939.

Grunting Ox, see YAK.

Grus ('the Crane'), S. constellation near Aquarius and Piscis Australis, introduced by 16th-cent. mariners. Near by are the constellations of Indus and Phoenix, on either side.

Grusenber, Mikhaïl Markovich, see BORODIN.

Grushevsky, see HRUSHEVSKYY.

Grütli, or **Rütli**, meadowland situated in the canton of Uri, Switzerland, near Lake Luzern. The Swiss League was founded here against Austria by the peasant leaders, Stauffacher, Arnold, Melchtal, and Welter Fürst, 1291. The meadow is now the property of the State, having been purchased by the school-children of Switzerland. See Friedrich von Schiller, *Wilhelm Tell*.

Gruyère, dist. and vil. of Switzerland in the canton of Fribourg, 16 m. SW. of that tn. It is noted for its cheese. The cap. of the dist. is Bulle.

Gryfice (Ger. *Greifenberg*), tn of Poland, in Szczecin prov., on the Rega, 45 m. NE. of Szczecin (q.v.). It was badly damaged

in the Second World War. There are sugar and canning industries. Pop. 5000.

Gryfino (Ger. *Greifenhagen*), tn of Poland, in Szczecin prov., on the Oder, 13 m. SSW. of Szczecin (q.v.). Until 1945 it was in Pomerania (q.v.). During the Second World War it was very severely damaged. Pop. 3000.

Gryllidae, see CRICKET.

Gryllus, genus to which the crickets belong. This order is distributed all over the world, but there are only 4 Brit. varieties.

Gryphius, Sebastian (1493-1556), printer, b. Reutlingen in Swabia. He settled at Lyons in 1528, and from that date onwards printed about 300 books, including Heb., Greek, Lat., Italian, and Fr. He was especially distinguished for the beauty of his Gk and Heb. types, and his Fr. and Lat. books are still highly esteemed. Among the most noted of his works are the fine Lat. Bible of 1550 and Dole's *Commentaria lingue Latine*.

Guacharo, or **Oil-bird** (*Steatornis caripensis*), first found at Caripe in Venezuela.



GUACHARO

It constitutes the family Steatornithidae, but is allied to the Nightjars. It is about the size of a crow, and lives chiefly in caverns near the sea. Recent sound recordings have shown that the oil-bird produces a series of high-pitched squeaks not unlike those of bats. Presumably, as in the mammals, the sounds are the outgoing part of a system of echo-location, the detection of objects by the echoes got back from them. At night and in the caves this 'sense' could be of great importance to an oil-bird.

Guadagnini, name of a family of violin makers in Italy. Lorenzo, who between 1695 and 1724 resided at Milan among other places, imitated the instruments of Stradivari. His son, Giovanni Battista (1711-86), resided at Milan and Turin, both of them making instruments which are among the best of their kind; and the family continued for another 2 generations.

Guadalajara: 1. Sp. prov., in Castilla la Nueva (q.v.), lying largely on the plateau NE. of Madrid (q.v.). It is watered by the Tagus (q.v.) and its tribs. the Henares and Tajuña. The riv. valleys are fertile, but in general the prov. is unproductive. Some silver is found. There was severe fighting here during the civil war of 1936-9 (see SPAIN, *History*). Area 4708 sq. m.; pop. 202,700.

2. (Rom. *Arriaca*) Sp. tn, cap. of the prov. of G., near the Henares. Once important, its fortunes declined with those of the Mendoza (q.v.) family. The grandiose former palace of this family was almost destroyed during the Civil war of 1936-9. There are noteworthy churches and a fort. Leather, soap, textiles, and flour are manuf. Pop. 18,200.

3. Cap. of Jalisco state, Mexico, 380 m. NW. of Mexico city, and situated 5200 ft above sea-level. Founded in 1530 by Sp. aristocrats, second largest city of the rep. Estab. originally as a base for exploration up the W. coast. After G. was first settled by conquistadores it was made the cap. of a rich and fertile region long known as the kingdom of New Galicia. The city prospered and by 1810 its pop. had reached 60,000. With the advent of the first Amer. locomotive (1888) the city's importance as a commercial and industrial centre was assured. Since then G. has steadily prospered, but it has never lost the charming old-world atmosphere of its Sp. colonial days which have left on it their indelible imprint. The *jarocho* tapatio of G. is now the national dance. G. is a trade and rail centre of the Pacific W. coast route. The city is large and handsomely laid out: the main plaza is a promenade in the centre of the city, flanked by the Gov. Palace and cathedral, and by adjacent arcades. Anct orange-trees border the plaza which is planned as an old-fashioned garden. It was in the old Gov. Palace that the patriot priest Hidalgo wrote part of his *Declaration of Independence*, 1811. G. is the seat of an archbishop. The cathedral, finished in 1618, but often added to, is the most outstanding example of the transitional style in Mexico. It contains an 'Assumption' by Murillo. The little church of Santa Monica is noted for its elaborately decorated façade. Other notable churches are the Santuario de San José de Gracia, the church of Jesús María, San Felipe, sanctuary of our Lady of Guadalupe, and the Mexicaltzingo church. The museum and library are housed in an anct seminary, which building, constructed in 1700, is one of the finest examples of 18th-cent. architecture on the Amer. continent. It contains a remarkable collection of outstanding Sp. and Mexican paintings. The Degollado Theatre is a graceful building in the neo-classic style. Facing it is the temple of San Agustín, typical of the city's older architecture. The univ. of G., one of Mexico's chief centres of intellectual activity, is noted for its murals by Orozco, whose studio may still be seen in the city. There are manufs. of cotton, woollens, pottery, metal wares, glass, and con-

fectionery. G. has an airport. Pop. 382,700.

Guadalaviar, or Turia, Sp. riv., which rises in the Sierra de Albarracín in the prov. of Teruel (q.v.). It flows E. to the tn of Teruel, and then curves S.S.E. to the Mediterranean near Valencia (q.v.). For that part of its course between the tn of Teruel and the sea it is usually called the Turia. It is important for irrigation. Length 200 m.

Guadalcanal, one of the largest and most important of the is. of the Brit. Solomon Is. Protectorate; lies just N. of lat. 10° S. and is crossed by long. 160° E. It is 100 m. long by 34 broad. It is mountainous for the most part and has a grand system of peaks rising to 8000 ft. The high land at the S., where the big hills occur, is 'the home of mystery' (Ivons). In these hills, tradition says, there are wild men or ogres, the Muumun, with long hair and stumps for feet. G. has dense forests, but extensive areas are devoid of trees, being clothed with a tall green mantle of grass, growing to a height of 6 ft. This grass extends over the plains and up into the mts, but the watercourses are lined with scrub and timber. Many streams of G. consist, in ordinary weather, of dry beds of stone and sand, water appearing only at a rock outcrop in the bed. A brilliant yellow orchid (*Dendrobium*) grows freely on the is. G. contains evidence of having been upraised more than once and it would seem from the raised beaches, common round the coast, that the upheaval is still going on (Knibbs). The natives are Melanesians (or Papuans) of a dark colour and are superstitious. The practice of *vele* or *hele* (= 'ghost', 'incarnation') seems to be connected with the cult of ginger as a thing possessing magical powers. The gov. has endeavoured, but with indifferent success, to put an end to the superstition of *vele*, which is really a sort of witchcraft. Rattan-woven shields, ornately decorated, were once a feature of local craftsmanship. The shin-bone spear, generally 11 ft long or more, was a formidable weapon, the spear-head being carved from a human tibia; but they are very rare indeed to-day, and none has been made for many years. The princ. are Honiara (H.Q. of the gov. of the Brit. Solomon Is. Protectorate and of the W. Pacific High Commission), Aola, and Lunga, all on the N. coast. G. was discovered in 1568 by Alvaro de Mendana, and was named by the Spaniards. Mendana intended to settle on it in 1595 but on that occasion he could not locate it. G. was the scene of a protracted campaign against the Japanese, who landed powerful forces there in the summer of 1942. Amer. and Australian forces were landed soon afterwards. The Japanese were driven out by early 1943, having lost nearly 9000 men killed or captured in the land fighting and many more in the sinking of ships, besides a large number of aircraft. See W. G. Ivons, *Melanesians of the South-East Solomon Islands*, 1927; and S. G. C. Knibbs, *The Savage Solomons*, 1929.

Guadalquivir (Moorish *Wadi-al-Kebir*; anct *Baetis*), Sp. riv., which rises in the E. of the prov. of Jaén (q.v.). It flows at first N.E., and then W. and SW. by Andújar, Córdoba, and Sevilla (qq.v.) to the Atlantic at San Lúcar de Barrameda (q.v.). It is navigable after Sevilla, though it has had to be canalised in one marshy dist. in which the riv. divides into branches. The prin. tribs. are the Guadajoz, Guadalimar, Genil, and Guadiato. The G. is very important for irrigation. Length 375 m. See **ANDALUCÍA**.

Guadalupe: 1. Riv. of Texas, rising in Kerr co., and flowing into San Antonio Bay. It is about 250 m. long.

2. Tn of Uruguay, see **CANELONES**.

Guadalupe Hidalgo, tn to the N. of Mexico City. It is the site of a church which is much visited by pilgrims to venerate the famous Black Virgin, who first appeared there in 1531. It was in this tn that the treaty was made between the U.S.A. and Mexico in 1848, giving New Mexico and Upper California to the U.S.A. Pop. 9500.

Guadarrama, *Sierra de*, range of mts in Spain, separating the provs. of Madrid and Segovia (qq.v.), and lying between the Duero and the Tajo (qq.v.). The Pico de Peñalara reaches 7890 ft.

Guadeloupe (La), is. of the West Indies and a Fr. colonial dependency. It is really formed of 2 is., Basse-terre and Grande-terre, separated by the Rivière Salée, which is spanned by a drawbridge. Basse-terre is of volcanic formation, the largest volcano (4870 ft) being Soufrière (a common name in West Indian is. connoting any sulphurous mt), while Grande-terre is comparatively flat. Thermal springs are active in many parts. The climate is humid, and averages 68° F., and the soil fertile, producing sugar—the prin. crop—cereals, cacao, coffee, cassava, yams, vanilla, cotton, and potatoes; while Basse-terre is covered with large forests. G. is being made the centre for agric. research in the Fr. West Indies (q.v.). The dependencies of G. are Marie Galante (q.v.), St Barthélemy (q.v.), Désirade (q.v.), Les Saintes (see **SAINTS**, **BATTLE OF THE**), and part of St Martin (q.v.), all of coral formation. The is. is ruled by a Prefect, assisted by a privy council, and is represented in the Fr. Parliament. The cap. is Basse-terre (pop. 15,000) to the SW. of Soufrière, situated near rugged and remarkably beautiful country. It dates from 1643, but its glory has departed with the development of Pointe-à-Pitre, which has a good sheltered harbour, on Grande-terre. The latter is a picturesque tn (pop. 60,000) of well-built houses which are mostly of stone with upper storeys of wood, many painted in gay colours. The fine beach of Ste-Anne is near by. It has a cathedral in the Place de l'Eglise, and also a fine harbour, and is the prin. commercial centre. Iron and lime phosphates are to be found in the dependencies, also calcareous stone quarries in Grande-terre. The is. was discovered by Columbus (who identified the Falls of Carbet) in 1493, but

no colony was founded until Duplessis and de l'Olive landed in 1635 and took possession in the name of France. In 1759 it was taken by the Eng., but recovered by the Fr. in 1763, at the end of the Seven Years War. In 1794 Pointe-à-Pitre and Basse-terre were captured by an expedition under Sir Charles Grey and Sir John Jervis (afterwards Earl St Vincent), but 2 months later the notorious Victor Hugues, commissary of the convention, landed at Gosier and drove the Eng. from their positions. Jervis returned and compelled the Fr. to surrender; but Hugues rallied his followers and inflicted a defeat on the Eng., after which Jervis re-embarked his forces and withdrew. After the withdrawal of Grey and Jervis in 1794 some 300 Fr. royalists who had assisted them were guillotined or shot by Hugues. Off Pointe-à-Pitre, on 5 June 1794, took place the 5-hr sea-fight between the *Blanche*, under Capt. Robert Faulknor, known as the Undaunted, and a Fr. frigate *Pique*, Faulknor being killed as he was lashing the bowsprit of the *Pique* to his own ship for the second time (see Sir A. Aspinall, *A Wayfarer in the West Indies*, 1928). In 1810 the Eng. again seized the is., but it was restored to France in 1814. In the following year it was again taken by the Eng. after the battle of Waterloo and administered by them on behalf of the legitimate gov. of France until 1816, when a Fr. gov. took over control. There are 826 m. of good roads but only estate railways. A regular steamboat service is carried on by both Fr. and Eng., and the airport at Raizet near Pointe-à-Pitre connects with St Martin and is also used by main international lines; and there is a telegraph and telephone service on the is. A wireless station was opened at Desbrelan as long ago as 1918. There are good educational facilities, both public and private elementary schools being estab. Area 688 sq. m.; pop. 230,000.

Guadiana (anct *Anas*), riv. of Spain and Portugal. The Zancara, which rises in the prov. of Cuenca (q.v.), is its head-stream, but there is dispute about its true source. Near the Zancara are the lagoons, frequented by wildfowl, called los Ojos del Guadiana. The G. flows W. to Badajoz (q.v.), and then S., partly on the Sp.-Portuguese frontier and partly in Portugal, to the Atlantic at Ayamonte (q.v.). Length about 600 m.

Guadix (Moorish *Wadi-Asch*), Sp. tn in the prov. of Granada, on the G. It has anct walls and towers, a Moorish castle, and a Baroque cathedral. It is a mkt tn, and has mulberry plantations. Pop. 27,550.

Guagua, tn of the is. of Luzon, Philippine Is. It is situated in the prov. of Pampanga. It cans fish and packs meat. Pop. 34,738.

Guaira, La, see **LA GUAIRA**.

Guajira (La), commissary of Colombia, South America. It is a peninsula on the NW. shore of the Gulf of Maracaibo, with an area of 4700 sq. m. It became part of the rep. of Colombia in 1891. Its land

products are cattle, corn, coconuts, and divi-divi; coastal, salt-flats and pearl fisheries. Cap. Uribia. Pop. 55,900.

Gualdo Tadino, It. tn. in Umbria (q.v.), 22 m. N.E. of Perugia (q.v.). In its vicinity Totila was defeated by Narses (q.v.) in 552. The tn has a cathedral and a fortress, and is known for its pottery. Pop. (tn) 5600; (com.) 13,300.

Guaileguay, tn in the prov. of Entre Ríos, Argentina, about 8 m. from Puerto Ruiz. Educational centre of the region, it has an airport, and is 115 m. N.W. of Buenos Aires by rail. Pop. about 23,500.

Guaileguaychú, riv. port and cap. of a dept. of the same name, in the prov. of Entre Ríos, Argentina, situated on the R. G., about 9 m. from its confluence with the Uruguay. Trades in meat extracts, and has usual agric. activities, also sawmills and tanneries. G. is 230 m. by rail from Buenos Aires. It is connected (4 times a week) by steamer with Fray Bentos (q.v.) in Uruguay, with which country G. does considerable trade. Pop. about 40,000.

Guam, Guahan, or Guajan, largest and most S. of the Ladrone or Mariana Is. Magellan discovered the is. in 1521. It was ceded by Spain to the U.S.A. in 1898 and therefore did not come under the Jap. mandatory control of the rest of the Marianas Archipelago which had been sold by Spain to Germany in 1899. It is maintained as an Amer. military outpost. The is. is 30 m. long, from 4 to 8½ m. broad, and has an area of some 205 sq. m. The surface is mountainous and the coast surrounded by coral reefs. The best harbour and port of entry is Apra on the W. coast. The products of G. are maize, sweet potatoes, copra, rice, and fruits. The native inhab., the Chamorros, are classified among the Micronesians. G. was captured by the Japanese in 1911, and retaken by Amer. forces in 1944. Pop. 22,000. See W. H. Haas (editor), *The American Empire. A Study of the Outlying Territories of the United States*, 1940; L. Thompson, *Guam and its People*, 1941; and F. M. Keesing, *The South Seas in the Modern World*, 1942.

Guamo, tn of Colombia, 75 m. SW. of Bogotá. Formerly cap. of Tolima, it has a big Texas Oil refinery. Pop. about 21,000.

Guan, bird belonging to the family Gracidae, sub-family Penelopinae, native of Central and South America. These birds are characterised by bare throats and wattles. They are gregarious birds, and are usually to be found in forests. Their colour is olive-green or brown, and sev. of the species are capable of being domesticated.

Guanabacoa, tn of Cuba, 3 m. E. of Havana. It is built on high land and is well provided with public buildings. It is connected by rail and motor road with Havana, of which it is a residential suburb. There are medicinal springs in the tn. Pop. about 30,000.

Guanacaste, prov. of NW. Costa Rica, including the peninsula of Nicoya. The surface is covered by large forests, and is well provided with land suitable for

grazing. Tropical crops include sugar, coffee, and hardwood. The cap. is G. or Liberia. Area 4000 sq. m.; pop. (prov.) 108,800; (tn) about 5260.

Guanaco, or **Huanaco** (*Lama Luanacus*), wild species of the camel tribe, the llama and alpaca being the domesticated varieties. It is of a reddish-brown colour, and is a native of South America, found particularly on the Andes and generally living in herds.

Guanajuato: 1. State of Central Mexico, bounded on the N. by San Luis Potosí, on the S. by Michoacán, on the W. by Jalisco, and on the E. by Querétaro, with an area of about 11,805 sq. m. This state lies in the central plateau of Mexico, and its surface is very mountainous, the Sierra Gordo and Sierra de G. being the highest ranges. The chief riv. is the Río Grande (de Lerma), and the cap. G. G. is exceedingly rich in minerals. The silver-mines are of the greatest importance, being worked since the Sp. conquest. Pop. 1,329,000.

2. Cap. of the state of G., situated to the NW. of Mexico City, from which it is 250 m. by rail. This city consists of a number of vils. placed round the mines, and being on uneven ground has steep and winding streets; its well-built houses have a generally oriental appearance. Although in a narrow gorge, it is 6550 ft above sea-level. Among its chief buildings are the Alhóndiga, or colonial grain storehouse, a cathedral, mint, univ., and theatre. In addition to the silver and gold mines which are near, G. manufs. pottery, chemicals, and other articles. Pop. 25,500.

Guanare, cap. of the state of Portuguesa (q.v.), Venezuela. It is noted for its trade in cattle. Pop. 9000.

Guancabellca, see HUANCABELICA.

Guanches, or **Guanchos**, race originally found in the Canary Is. They were finally conquered by the Spaniards about the end of the 15th cent., and at the present time are nearly extinct. The character of their skull—low forehead and projecting jaw—shows a likeness to the Cro-Magnon race of France, while their language and inscriptions point to a connection with the Berbers of North Africa. See S. Berthelot, *Antiquités Canariennes ou annotation sur l'origine des peuples qui occupèrent les îles fortunées depuis les premiers temps jusqu'à l'époque de leur conquête*, 1879.

Guanine ($C_4H_5N_3O_2$), highly nitrogenous base containing the uric acid nucleus found in guano and other animal products. It forms a white insoluble powder which is converted by nitrous acid into xanthine, a substance present in tea.

Guano (derived from the Peruvian word *huano*, dung), excrement of certain sea-fowl, e.g. gulls, cormorants, and penguins, together with other animal remains such as feathers and bones. It is used largely as a manure, its value as such depending on the fact that it is a general fertiliser yielding all the constituents of plant food in a condition that can be readily assimilated. The chemical composition is extremely complex and varies according to the locality and age of

the deposit. The main constituents are nitrogenous (uric acid) and phosphatic (calcium phosphate) compounds, together with various potassium and ammonium salts and a nitrogenous substance, guanin (q.v.). The most highly nitrogenous and therefore most valuable G. (containing u to 16 or 18 per cent nitrogen and 9 or 11 per cent P₂O₅) has been imported since 1840 from the Chincha Is. off Peru. In Peru the G. deposits now belong to the gov., and exports have been forbidden since 1941. According to Boussingault 1 ton of this is equal to about 30 tons of farmyard manure or cow-dung. The best supplies of G. are now practically exhausted, and low quality grades are now 'fortified' with ammonium sulphate. Natural G. is one of the prin. exports of Seychelles. There are large deposits of phosphatic G. in Ocean Is. (Gilbert and Ellice Is. Colony) and the colony is almost entirely dependent on their exploitation. Whale and fish G. are similar products resulting as by-products of the whaling and fishing industries respectively. They contain from 5 to 10 per cent nitrogen and 6 to 14 per cent P₂O₅.

Guantánamo, tn in the chief coffee-growing dist. of SE. Cuba, 13 m. N. of Calmanera, its port, and 49 m. E. of Santiago de Cuba. One of the 4 naval stations ceded to the U.S.A. by Cuba in 1901 is on G. Bay. Exports sugar and lumber, and has a good harbour. Pop. city, 42,423; munic. pdality, 91,737.

Guarani ('warriors'), S. Amer. aborigines, one of the chief groups of South Amer. Indian tribes, who lived between Paraná R. and the Atlantic. It is the name of the currency of the modern Rep. of Paraguay. The name is also applied to a great linguistic family Tupi-G., which formerly occupied Paraguay, Uruguay, and Brazil, with branches also in Bolivia and Peru. These numerous tribes were distinguished by the same language and similar customs. They cultivated manioc and other plants, and had developed various peaceful arts. They were usually friendly with the whites and easily subdued. The modern pop. of Paraguay are largely descendants of the G. and the Spaniards with whom they intermarried. The Jesuits estab. important missions among them. The G. language was early adopted by missionaries as the *lingua franca*. See M. S. Bertoni, *La Civilización Guaraní*, 1922; S. K. Lothrop, 'The Guaraní', in J. H. Steward, *Handbook of South American Indians*, vol. 1, 1946; Raine, *Paraguay*, 1956.

Guarantee, or **Contract of Suretyship**, promise to be collaterally responsible for the debt or default of another person, the prin. debtor. It is to be distinguished from an indemnity (q.v.) because no liability arises until the prin. debtor has made default. A G. is within the Statute of Frauds (see FRAUDS, STATUTE OF), and hence is unenforceable unless evidenced by writing; but the writing need not contain any statement of consideration (q.v.) given to the surety in return for his G. The practical effect of this is that a surety

cannot be successfully sued if he can prove that there has been no consideration, but that where consideration has been given, it is no defence that it is not stated in writing. A valid contract of suretyship must be made with the creditor, and the guarantor must be under no liability in the prin. contract. It seems now to be settled law that a surety cannot compel the creditor to sue the debtor before having recourse to him, for the creditor can sue the surety without even informing him of the debtor's default. Any fraudulent concealment or wilful misrepresentation on the part of the creditor inducing the G. will entitle the guarantor to repudiate the G., and if the creditor alters the terms of the G. without the consent of the surety, the latter is discharged, as also if he takes a new security from his debtor in substitution for the original security. On payment of the debt the surety has the right not only to recover from the prin. debtor the full amount of the debt with interest, and costs reasonably incurred in disputing the claim, but to be subrogated to all the rights, equities, and securities given by the prin. debtor to the creditor. A discharge in bankruptcy of the prin. debtor or the acceptance by the creditors of a scheme of arrangement does not release from liability a person who was surety for his debts (Bankruptcy Act, 1914). See T. Hewitson, *Suretyship*, 1927.

Guarayos, aborigines, of South America. They are found between 15° and 16° S. in the east land of Bolivia or Oriente. All attempts to bring them under the permanent influence of civilisation have been frustrated by their fierce and barbarous habits. They cultivate maize and plantains. See Fray José Cardús, *Las misiones franciscanas entre los indios de Bolivia*, Barcelona, 1886.

Guard, **National**, see UNITED STATES, Army.

Guarda: 1. Dist. of N. central Portugal, in Beira Alta prov. (q.v.). It is bounded on the E. by Spain and on the N. by the Douro (q.v.). It is very mountainous, and has the Serra do Estréla in the SW. Agriculture is the main occupation, and wine is produced. Area 2122 sq. m.; pop. 104,400.

2. Tn of Portugal, cap. of G. dist., 160 n. NE. of Lisbon. It is at the NE. end of the Serra do Estréla, 3450 ft above sea-level. There is a cathedral (15th-16th cents.). The tn has an agric. mkt., and leather industries. Pop. 7000.

Guardafui, NE. extremity of East Africa, situated at the S. entrance of the Gulf of Aden.

Guardi, Francesco (1712-93), Venetian painter trained under his brother, Gian Antonio G. (1698-1760), as a figure painter. In middle age he took to painting views of Venice, like Canaletto, though he has a less formal and even impressionistic approach, showing an individual mastery.

Guardiagrele, lt. tn, in Abruzzi e Molise (q.v.), 11 m. S. of Chieti (q.v.). It possesses many anc. buildings, including

a beautiful 14th-cent. church, and suffered much damage during the Second World War. Pop. 8000.

Guardian, in Eng. law the person who has the legal control of another, usually a minor or a person of weak intelligence, and who also has the management of his property. A child's natural G. is the father or mother, but when they are dead 1 or 2 G.s are generally appointed by will. A G. may therefore be such by nature, e.g. the parent or parents or other ancestor, or by statute; or a judicial G., appointed by the chancery div. of the high court. The powers of the G. are much the same as those of the parent (see PARENT AND CHILD). A G. is appointed by the court when disputes arise; and it is to the chancery court that a G. can appeal if in a serious difficulty with his ward. In Scotland a G. is termed a tutor. The consent of the G. is necessary for the marriage of an infant ward, unless the court dispenses with it. Poor Law G.s were members of boards elected to administer the Poor Law in unions of parishes. These boards were abolished in 1929 when their functions were transferred to public assistance committees appointed by co. and co. bor. councils. In 1948 Poor Law administration was assigned to the National Assistance Board. See POOR LAWS.

Guardians, Board of, see POOR LAWS.

Guardian's Allowances, see NATIONAL INSURANCE ACT (1946).

Guards (Household Troops) (from Fr. *garde*). G. form the oldest part of estab. armies, in fact it is probably from the G. that the army, as we know it, is derived. Formerly it was customary for the sovereign to depend upon the national levy for his soldiers, but gradually there grew up the nucleus of a standing army in the formation of bodies of personal G. for the king. In England these took the form of the house carles, a body probably first brought into England by Canute. Hist. gives us many examples of G. playing an important part in the affairs of their country. In this respect we may mention the house carles of Harold who d. almost to a man round his body at Hastings, the Swiss G. of Louis XVI, who perished defending their king, and the Old Guard of Napoleon, the veterans upon whom he depended when all else had failed. These are but a few examples. The G. of the sovereign at the present time may be distinctly divided into 2 groups: the first, those gentlemen and retainers who form a purely personal bodyguard, and secondly those regiments which are brought into closer contact with the sovereign than usual, but who form part of the active army as well. To the first div. belong the Honourable Corps of Gentlemen-at-Arms, the Yeomen of the Guard, together with the Royal Company of Archers, who form the Queen's Scottish bodyguard. The 2 former owe their origin to the Tudor monarchs. The oldest of all these bodies is the Yeomen of the Guard, founded by Henry VII. Next came the Honourable Corps of Gentlemen-at-

Arms, founded at the accession of Henry VIII. The Scottish Company of Archers was founded by Act of the Privy Council of Scotland during the reign of Charles II. The second section of G. consists of certain regiments from the active army, comprising the Household Brigade. These, again, may be divided into 2 sections: the Household Cavalry and the Foot G. There are 2 regiments of Household Cavalry, the Life G. (q.v.) and the Royal Horse G. The Life G. have been Household troops since their formation at the Restoration. The Royal Horse G. acquired this status in 1827. The Foot G. of the Household Troops consist of 5 regiments, the Grenadiers, the Coldstream, the Scots G., the Irish G., and the Welsh G. See also under the names of the regiments.

Guards, Dragoon, see DRAGOON GUARDS.

Guardship, name applied to a ship which is posted at some port to act as guard. Usually she is the H.Q. of the various coastguard dists. and is stationed at a certain point with a nucleus crew. The crew can easily, however, be brought up to strength, and can then proceed immediately to action. The name of guard boat is also applied to a boat which sails round an anchored fleet at night in order to see that proper watch is being kept. Formerly the term was applied to that ship of the fleet which received the men from the press-gangs.

Guárico, state of S. Venezuela, on the cattle-raising llanos, bordering the Orinoco. It was formed in 1901 from a portion of the state of Miranda (q.v.). Coffee, cotton, and coal are produced. It has an area of 25,640 sq. m., and its cap. is San Juan de los Morros. Pop. 164,523.

Guarini, Giovanni Battista (1537-1612). It. poet, b. Ferrara, where, in 1577, he succeeded Tasso as court poet at the court of Alfonso II. He is remembered chiefly for his pastoral drama *Il Pastor Fido* (1580-9), written in blank verse, with choruses of shepherds, hunters, and nymphs, etc. It was trans. into many languages; Fletcher's *The Faithful Shepherdess* is an Eng. adaptation.

Guarini, Guarino, commonly known as **Guarino da Verona** (1374-1460). It. humanist. In 1429 he settled at Ferrara where he did much valuable work in establishing classical texts. His letters have survived. See R. Sabbadini (ed.), *Epistolario di Guarino Veronese*, 3 vols., 1915-19.

Guarneri, surname of a famous It. family of violin-makers who lived and worked at Cremona:

Andrea G. (1-1698), pupil of Niccolò Amati, whose marriage he witnessed in 1641. Many of his violins are of the Amati pattern, but are inferior to those of his master; his cellos possess fine acoustic qualities.

Giuseppe G. (1666-c. 1740), son of Andrea G., introduced a narrow-waisted and more boldly curved instrument, with the sound-holes set lower down, and superior to his father's in its power of sound.

Pietro Giovanni G. (1655-1720), another son of Andrea G., introduced greater width between the sound-holes; his varnish was of exquisite gold and pale red tints.

Pietro G. (1695-1762), son of Giuseppe G., produced some very fine instruments.

Giuseppe Antonio G. (1698-1744), son of Giuseppe G., and greatest genius of the family. His violins are of bold and massive build, with grand sonority of tone, and some of his finest date from about 1740.

See W. H., A. F., and A. E. Hill. *Violin Makers of the Guarneri Family*, 1931.

Guastalla, It. tn, in Lombardy (q.v.), 19 m. SSW. of Mantua (q.v.), on the Po (q.v.). It once belonged to the Gonzaga (q.v.) family. It has a cathedral and a school of music, and is an important agric. centre. Pop. 13,000.

Guatemala: 1. Rep. of Central America. The name is probably of Aztec origin and is said to mean 'land of the eagle' in its original form of Quauhtematlan. It is bounded by Mexico, Brit. Honduras, Honduras, and Salvador. The last-named formed part of the Sp. vice-royalty of G. until 1821 and the 2 countries have the same language and religion. Its 42,000 sq. m. are divided into 5 regions: the lowlands of the Pacific coast, the volcanic mts of the Sierra Madre, rising to 13,816 ft in Mt Tajumulco, the plateaus N. of these, the mts of the Atlantic versant, and the plain of Petén. It is richly watered and there are sev. extensive lakes. The bird life of the country is rare. The climate is healthy, save on the coast, where fever is prevalent. The rainfall in the cap. is 67 in. per annum. The country is rich in minerals, but owing to lack of transport mining is little developed; other important products are coffee, honey, bananas, sugar, wheat, cotton, rubber, timber, maize, and chicle gum. Important cattle estates exist upon the Pacific coast and cattle and hides are exported besides the above-mentioned products. Only 1 per cent of the pop. is of pure European descent. No part of Central America contains a greater diversity of tribes. There are 18 languages spoken, but literacy is under 50 per cent. The cap. city is G. la Nueva (G. city). The prevailing form of religion is Rom. Catholic, but the State recognises no distinction of creed. No convents or monasteries are allowed. There are nearly 400 primary and 100 secondary schools, with a total attendance of about 320,000. The national univ. (S. Carlos Borromeo) was founded in 1678. For the white and mixed pop. military service is compulsory. The rep. was set up in 1839, having been a part of the Central Amer. confederation for 18 years. The existing constitution was promulgated in Mar. 1945. A single-chambered national assembly or Congress has the legislative power. Its members are chosen for 4 years by direct popular vote; one-half are renewed every 2 years, and deputies are not eligible for re-election until 1 term has elapsed. The President

is elected for 6 years, and re-election is forbidden for a period of 12 years. President Ubico's term, expiring in 1937, was extended to 1949 by a plebiscite in 1935 and a constitutional amendment in 1941. However, there was a rebellion in 1944 which overthrew him, the new President Juan José Arévalo being followed by the pro-Communist Jacobo Arbenz, who was removed after the Civil war in favour of Carlos Castillo Armas in 1954. Castillo was assassinated by a palace guard in July 1957. Vice-President Luis Arturo González López became the new provisional president, and



E.N.A.

GUATEMALA: INDIANS BOARDING A LAUNCH AT SAN LUCAS TALIMON

Atitlán volcano is seen on the right.

declared that the gov. would maintain the previous anti-Communist and democratic policy. Later a military junta headed by Gen. Oscar Mendoza Azurdia took over the gov. Gen. Miguel Ydígoras Fuentes became president on 13 Feb. 1958. Under the new constitution the ban on immediate succession is explicit, the right of rebellion in its defence being expressly sanctioned. All males over 18, and literate females over the same age, are enfranchised. Nine executive depts conduct the administration under the President. The assembly consists of deputies for each 50,000 inhab.; it declares war, governs national finance, and controls concessions. Slight amendments may be made if the new 'Political Statute' of 1954 reaches a state of practical enforcement. There are some 720 m. of railway. There is direct communication with the U.S.A. and Mexico, and a line is now open into El Salvador. There is also an electric line from San Felipe to Quezaltenango. Road-making

has increased of more recent years and there are excellent roads radiating from G. city. The national system totals 4320 m. There are 47 wireless stations, and television. There are regular mails to England and the U.S.A., and small steamers and motor boats ply on the rivers and lakes. Air mail and passenger services connect G. city with sev. cities of Central America. International trade in 1954 was valued at: imports, \$31,000,000; exports, \$34,000,000. There is an army of 8000 and a small air force.

Archaeologists have brought to light remains of 3 civilisations, described by the late Dr T. T. Waterman, of the National Museum of G., as (1) Zapotec (or Aztec); (2) Maya (older than Zapotec); (3) a nameless culture older than either. Valuable archaeological work has been done by the staff of the National Museum in G., but a great deal of new exploration is desirable. In addition to large architectural works much eroded by rainfall and masked by vegetation, there are other relics, notably fragments of pottery and chips of obsidian. Scattered over the sites are large building stones of volcanic material, beautifully squared and dressed. Some of the buildings bear colossal heads, carved in stone, and apparently used to ornament façades. At Baúl and Pantaleón there are carvings of marked artistic merit. The Maya remains near Quirguá may be compared with those still nearer to the Honduras border at Copán. Others exist northward in the remote Petén dist. at Tikal and, westward, at Chaculá (Huehuetenango). The monuments at Cotzumalguapa (S. of Escuintla), at Mitla (Jutiapa), at Utatán (Quiché), and Tecpán are later (*South American Handbook*).

G. was conquered by the Spaniards under Pedro de Alvarado between 1522 and 1524. On G.'s 'claim' to the ownership of Brit. Honduras see *BRITISH HONDURAS*. The chief tns are G. city, Quezaltenango, Cobán (qq.v.), and Zapaca. Chief seaports are San José de G. and Champerico (qq.v.) on the Pacific, and Puerto Barrios (q.v.), Puerto Tomás, and Livingston on the Atlantic side. Pop. 2,788,100 (60 per cent Ladinos). See J. V. Mejía, *Descriptive Geography of the Republic of Guatemala*, 1922; J. Muñoz and A. B. Ward, *Guatemala. Ancient and Modern*, 1940; V. W. von Hagen, *Maya Explorer: John Lloyd Stephens and the Lost Cities of Central America and Yucatán*, 1942; Helen S. Travis and A. B. Magill, *What Happened in Guatemala*, 1954.

2. Cap. of the rep. G. (sometimes written G. la Nueva and formerly Santiago de los Caballeros de G.), until 1821 cap. of the Sp. captaincy-general of G., which comprised Chiapas in Mexico and all Central America except Panama. G. is built at 4870 ft above sea-level, in a wide table-land traversed by the Río de las Vacas, or Cow R., so called from the cattle introduced here by Sp. colonists in the 16th cent. The edge of the table-land is marked by deep ravines. Beyond it are

lofty mts, the highest peaks being on the S., where the volcanic summit of the Sierra Madre exceed 12,000 ft. It has a station on the transcontinental railway from Puerto Barrios on the Atlantic (190 m. N.E.) to San José on the Pacific (75 m. S. by W.) and to Champerico via Retalhuleu. Connection is made at Ayutla with the National Railways of Mexico. G. is 3 times the size of any city in the rep. and has a corresponding commercial superiority. Its archbishop is the primate of Central America (excluding Panama). Like most Sp.-Amer. tns it is laid out in wide and regular streets which are often planted with avenues of trees, and it has large suburbs. Though usually only of one storey, the houses are solidly and comfortably constructed. Many of them have large gardens and courts surrounding them. In 1918 a severe earthquake destroyed many of the public buildings, but in the business quarter many fine new buildings have been erected. The chief of the open spaces is the Plaza Mayor which contains the cathedral, built in 1730. There are 2 fine parks in the N., the Minerva being noted for the great relief map of the country. Scale 1:10,000. Then there are the archiepiscopal palace, the gov. buildings, the mint, and other public offices; and the Parque Central, now the favourite resort of the inhab. A univ. was reopened in 1918. There are a number of schools for each sex, besides hospitals and an orphanage. Many of the prin. buildings in the place were originally convents. In 1853 a theatre was founded which is one of the best in Central America. The museum was founded in 1734. There are 2 fortresses, the Castillo Matamoros, built by Rafael Carrera, and the Castillo San José. Water is brought from a distance of about 8 m. by 2 old aqueducts from the tns of Mixco and Pinula, but municipal improvements to the drainage and water supply have been made. Fuel and provisions are largely supplied by the Pokoman Indians of Mixco. G. has an airport and railway, and its general prosperity has secured for it the name of the Paris of Central America. Pop. 295,000.

Guatemala Antigüa (old G.) is situated 28 m. by road SW. of the present cap., 5030 ft above sea-level. It was once a splendid city, but it has been destroyed sev. times by earthquakes. It is still famous for its Holy Week procession. In the 18th cent. it had a pop. of 80,000, a univ., and over 100 churches and monasteries. The present tn is surrounded by picturesque coffee estates. Pop. 10,000.

Guava, or *Psidium guajava*, species of Myrtaceae found in tropical America. It is a tree which bears white flowers, followed by a succulent edible yellow fruit which is often used in making jellies and preserves. The black G. is *Guettarda argentea*, a species of Rubiaceae.

Guayama, tn of S. Puerto Rico, a trading, sugar milling, and dairying centre in an agric. region (sugar cane, tobacco, coffee, corn, fruit). Pop. 19,400.

Guayaquil, chief port and largest city of Ecuador. It is the cap. of the prov. of Guayas (q.v.) and is 40 m. from the mouth of the R. Guayas. The climate is extremely oppressive. The newer part of the tn where the wealthier residents live is far better than the old. Much improvement has been made in more recent years; the sanitation is modern and the conditions of public health are satisfactory from May to Dec. The tn is the seat of a bishop, and has a cathedral, a bishop's palace, a univ., a technical school, and 3 theatres. The chief exports are cacao, Panama hats, cotton, tobacco, tagua nuts, and coffee. It has also shipbuilding yards, steam sawmills, foundries, machine shops, and breweries. The snow-capped peak of Chimborazo can sometimes be seen from the city, which also has an airport. Pop. 298,000.

Guayaquil, Gulf of, inlet of the Pacific Ocean on the W. coast of South America.

Guayas, stretch of ter. on the SW. coast of Ecuador forming with the Galápagos is. a prov. of that country. The land is generally low-lying and is extremely fertile. The chief products are cacao, coffee, tobacco, sugar cane, and rice. Area 8300 sq. m.; pop. 664,560.

Guayevu Language, see SOUTH AMERICAN NATIVE LANGUAGES.

Guaymas, old Mexican seaport and resort situated on the Gulf of California, near the mouth of the Yagui R., in the state of Sonora. It has air and rail connections. The chief exports are pearls, silver ore, and agric. products. The climate is hot in summer. Sea-fishing is good. Pop. 9000, including a number of Chinese.

Gubat, small port on the E. coast of Sorsogon prov., Luzon, Philippine Is. Exports copra and hemp. Pop. 29,245.

Gubbio (anct *Eugubium* or *Iguvium*), It. tn, in Umbria (q.v.), on a SW. slope of the Apennines, 20 m. N. of Perugia (q.v.). It has retained its medieval character, and has a Gothic cathedral (partly 12th cent.), other anct churches, and fine palaces. The Eugubine Tablets (q.v.), found in 1444, are kept here. St Francis (q.v.) of Assisi worked among the lepers in G. and it was here that he tamed a fierce wolf. In Renaissance times the tn was known for its majolica ware, and this is still imitated in a few factories. There are also textile manufs. Pop. (tn) 9300; (com.) 36,700.

Guben, Ger. tn in the dist. of Kottbus, on the l. b. of the Lusatian Neisse (q.v.), 22 m. NE. of Kottbus (q.v.). It is of anct origin, and was very badly damaged during the Second World War. Since 1945 the part of the tn on the r. b. of the riv. has formed a separate tn in Poland (see GUBIN). There are lignite mines and a textile industry. Pop. 20,000.

Gubernatis, Angelo de, see DE GUBERNATIS, ANGELO.

Gubin, tn of Poland, in Zielona Góra prov., 32 m. W. of Zielona Góra (q.v.). It was formed in 1945 from that part of the Ger. tn of Guben (q.v.) which lay on

the r. b. of the Lusatian Neisse. There is a hydro-electric station. Pop. 4000.

Guchkov, Aleksandr Ivanovich (1862-1936), Russian politician, chairman of the Octobrists (q.v.) party, and President of the 3rd State Duma (see DUMA). During the First World War he was chairman of the Duma Committee on Military and Naval Affairs, then chairman of the non-governmental Central War Industries Committee. After the Feb. Revolution (q.v.) in 1917 he was Minister for War and Navy in the Provisional Gov.

Gude, Hans Fredrik (1825-1903), Norwegian painter, pupil of the Düsseldorf Academy (1841) and prof. there (1854). He went to England (1862). G. became prof. at Karlsruhe arts school (1864) and at Berlin Academy (1880-1901). He painted many Norwegian mt landscapes with lakes, rivs., and waterfalls. See L. H. S. Dietrichson, *As H. Gude's Liv og Vaerker*, 1899.

Gudenaa, chief and longest riv. of Jutland, Denmark, about 85 m. long. It flows NE., joining the Cattedag by an estuary 1 m. wide, about 16 m. NE. of Randers.

Gudgeon (*Gobio gobio*), cyprinid fish of Europe and N. Asia. Rarely exceeds 7 in. in length. Has a barbel on each side of jaw, and is greyish, with dark blotches. It prefers clear streams with gravelly bottoms.

Gudlaugsson, Jónas (1887-1916), Icelandic poet, novelist, and journalist who wrote in prose and verse in Icelandic, Dan., and Norwegian. He was the most gifted Icelandic author of his generation.

Gudmundsson, Gudmundur (1874-1919), Icelandic lyric poet and verse translator notable for the sweetness and spontaneity of his verse, some of which has a serene religious undertone.

Gudmundsson, Kristmann (1901-), Icelandic novelist. His first book was a vol. of verse in Icelandic, but he gave up verse for prose, went to live in Norway, and for a number of years wrote in Norwegian only. Of late he again writes in Icelandic. See Stefán Einarsson, *History of Icelandic Prose Writers*.

Gudmundsson, Tómas (1901-), Icelandic lyrical and humorous poet who has won great popularity for his polished verse.

'Gudrun,' or 'Kudrun,' name of a Middle High Ger. 13th-cent. epic (author unknown), the Ger. *Odyssey*, next important in early Ger. literature to the *Nibelungenlied*. G. was the daughter of King Hettel of Heselungen (Friesland). The epic deals with legends mainly of the North Sea coasts and Normandy. E. Martin's ed., 1902, is the best modern one. There are modern Ger. versions by C. J. Simrock, 1843, G. Freytag, 1888, and others. See also Wilmann, *Die Entwicklung der Kudrundichtung*, 1873.

Guebres, Guebers, Gabers, or Ghebrs (Persian *ghebr*: cf. *Giaour*), name (meaning infidels) applied in Persia to the adherents of the anct religion, Fire-worshippers, Zoroastrians, or Parsees (q.v.). They number about 8000 or 10,000, and call

themselves Beh-Dinān ('those of the Good Faith'). See E. Tylor, *Primitive Culture*, II, 1871.

Guebwiller (Ger. *Gebweiler*), Fr. tn, cap. of an arron., in the dept of Haut-Rhin, on the Lauch, at the E. foot of the Vosges Mts (q.v.). It has a church which is partly 12th cent., and a Dominican church of the 14th cent. It manufs. textiles, and machinery, and has notable wines. Pop. 10,100.

Guedalla, Philip (1889-1944), biographer, b. London. He was educ. at Rugby and Balliol College, Oxford, and practised law for some years. *Supers and Supermen*, a vol. of biographical essays, 1920, was followed by *Lives of Palmerston*, Wellington, and Gladstone, all highly individual contributions to the hist. of the 19th cent. In *The Hundred Years*, 1936, he depicted the century from the accession of Victoria and in its sequel, *The Hundredth Year*, 1940, he gave a vivid impression of the events of that year as a turning point in modern affairs. During the Second World War he pub. a penetrating sketch of Winston Churchill, and a study of Brit. air strategy in the Middle East (commissioned by the Air Ministry), which was pub. on the day of his death. His great interest in Lat. America was shown by his visits there and by his books *Conquistador*, 1927, and *Argentine Tango*, 1932. His chief works are perhaps characterised by too great a fondness for epigram and the stylistic exuberance of the Lytton Strachey method of biography, but he had a flair for detecting, in a chaos of historical records, the salient personality and the truly significant events; and with the aid of a strong imagination could convey his view of hist. through a series of impressive portraits and episodes handled with rare intellectual integrity. Besides the above works he wrote *The Partition of Europe, 1715-1815*, 1914, *The Second Empire*, 1922, *Bonnet and Shawl*, essays on Victorian women, 1928, *The Queen and Mr Gladstone, 1845-1879*, 2 vols., 1933, *The Hundred Days*, 1934, *Idylls of the Queen*, 1937, and *The Two Marshals*, 1943, a study of Bazaine and Pétain.

Guelder-rose, or *Viburnum opulus*, family Caprifoliaceae, a deciduous shrub

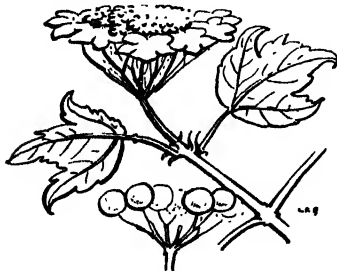
common to N. Europe and to Britain. The inflorescence is flat, and the centre flowers only are fertile. See **VIBURNUM**.

Guelderland, or **Guelders**, see **GELDERLAND**.

Guelph, surname of the Brit. royal family of the house of Hanover. It was superseded in 1917, during the First World War, by Windsor (q.v.).

Guelph, co. tn of Wellington co., Ontario, Canada, on the R. Speed, 60 m. from Toronto and 28 m. NW. of Hamilton. Known as 'the Royal City' from its name. On Canadian National and Canadian Pacific Railways. Founded by John Galt, the Scottish author, in 1827, in the centre of a rich agric. dist.; in the same year the settlers organised the first 'agricultural society' in Upper Canada, and later the city became the site of the ann. Ontario prov. winter fair. The famous Ontario Agric. College was inaugurated in 1874 and the Ontario Veterinary College later. Associated with the veterinary college is the Macdonald Institute of Economics for Women. The city has a beautiful park, 20 churches, a fine public library, and 2 hospitals. The manufs. include iron and steel, textiles, rubber, woodwork, carpets, felt, clothing, soaps, stoves and furnaces, and electric washing machines. Pop. 30,950.

Guelphs and Ghibellines. These names are the Italianised forms of the Ger. words **Welf** and **Waiblingen**. Tradition tells how, during a fight round Weinsberg in Dec. 1140 between Conrad III and Welf, count of Bavaria, a member of the powerful family to which Henry the Lion, duke of Saxony and Bavaria, belonged, the soldiers of the latter raised the cry 'Hie Welf,' to which the king's troops replied with 'Hie Waiblingen,' this being the name of one of Conrad's castles. The rivalry between the houses of Welf and Hohenstaufen, of which family Conrad was a member, had already been a prominent factor for sev. years in the hist. of Swabia and Bavaria, although its introduction into Italy, in a modified form, dates from the time of the It. expeditions of the Emperor Frederick I. Chosen Ger. king in 1152, Frederick was not only nephew and heir of Conrad, he was related also to the Welfs; yet although his election abated to some extent the rivalry between Welf and Hohenstaufen in Germany, it opened it up on a larger and fiercer scale in Italy. During the period covered by Frederick's It. campaigns his enemies became known as Welfs, while his partisans seized upon the term of Waiblingen or Ghibelline, and the contest between the 2 parties was carried on with extreme ferocity. The struggle between Guelph and Ghibelline dominates the hist. of Italy in the Middle Ages. At the opening of the 13th cent. the contest was intensified by the fight for the Ger. and imperial thrones between Philip, duke of Swabia, a son of Frederick I, and the Welf, Otto of Brunswick, afterwards the Emperor Otto IV: a fight waged in Italy as well as in Germany. Then, as heir of Philip of Swabia, Frederick II was



GUELDER-ROSE

forced to throw himself into the arms of the Ghibellines, whilst his enemies, the popes, ranged themselves definitely among the Guelphs, and soon Guelph and Ghibelline became synonymous with supporter of pope and emperor. After the death of Frederick II in 1250, the Ghibellines looked for leadership to his son, the Ger. king, Conrad IV, and then to his natural son, Manfred, whilst the Guelphs called the Fr. prince, Charles of Anjou, to their aid. The combatants were nearing exhaustion, and after the Hohenstaufen defeat at Tagliacozzo, 1268, this great struggle began to lose its real force. Guelph and Ghibelline were soon representing local and family, rather than papal and imperial, interests. In the 15th cent. the 2 names began to die out of current politics. When Louis XII of France conquered Milan at the beginning of the 16th cent., the old names were revived. The Fr. king's supporters were called Guelphs and those of the Emperor Maximilian I were referred to as Ghibellines. Theoretically, the Guelph party meant the burghers of the consular coms., the men of industry and commerce, and the Ghibelline party meant the champions of centralised despotism. Dante was a Ghibelline and Petrarch a Guelph.

See C. Poulet, *Guelphs et Ghibellines*, 1920; and G. Fasoli, *Guelphi e Ghibellini di Romagna, 1280-81*, 1936.

Guenever, see GUINVERE.

Guérande, picturesque old Fr. tn, situated 47 m. W. by N. of Nantes in the dept of Loire-Inférieure. It is near the sea and has a handsome medieval church. Pop. 6000.

Guercino, Il ('squinny-eyed'), the nickname of Giovanni Francesco Barbieri (c. 1591-1666), It. historical painter, b. Cento, in Ferrara. A self-taught genius, who formed his style, successively, after Caracci, Caravaggio, and Guido. His masterpiece, 'St Petronilla,' 1622, was painted for Gregory XV and later was placed in the Capitol. Through his drawings he had influence on the Eng. school.

Guéret, Fr. tn, cap. of the dept of Creuse. It grew up around a 7th cent. abbey, and was the cap. of the anct prov. of Marche (q.v.). It has a market, and a leather industry. Pop. 10,300.

Guerrillas, name given to bands of armed men who carry on an irregular warfare on their own account. The term originated in Spain during the Peninsular War, when bands of patriots retired to the mts and fought against the Fr. Some joined Wellington and rendered him service, but when peace was concluded many formed themselves into robber bands. Guerrilla warfare was dealt with at The Hague Conference in 1899, and the rules made were reaffirmed in 1907. G. played a prominent part throughout the Second World War as well as in Ethiopia, during the It. invasion, and in the Sp. Civil war. In Russia, where they were more generally known as 'partisans,' they operated, despite savage reprisals, behind the advancing enemy with considerable effect,

and notwithstanding hardships they were able to hold out almost indefinitely. Partisans also played an important part in N. Italy in 1943 in bringing about the final overthrow of Mussolini. Under the name of the *Maquis*, Fr. G. co-operated with the Anglo-Amer. invaders, 1944. In the closing stages of the Second World War, and afterwards, Gk G. of varying political parties waged a bitter intestine war until well into the 1950's. Subsequent G. movements include the Mau-Mau in Kenya, and E.O.K.A. in Cyprus. See GREECE, *History*; KENYA; CYPRUS.

Guérin, Georges Maurice de (1810-39), Fr. poet, b. Le Cayla, Languedoc. His *Reliquia*, letters, poems, etc., were pub. in 1860, ed. by G. S. Tréhutien; to this ed. appeared as preface the famous critique of Sainte-Beuve, who regarded him as a spiritual kinsman of Bernardin de Sainte-Pierre. Although not wholly devoid of a tendency to morbid sentimentalism, his writings are remarkable for their exquisite appreciation of the pagan beauty, the harmony and pathos of Nature. He d. of consumption at the age of 29. The best picture of G. is to be found in the *Journal* of his sister, Eugénie G. See M. Arnold, *Essays in Criticism*, 1865; A. Lefranc, *M. de Guérin*, 1910; and Naomi Royde Smith, *The Idol and the Shrine*, 1949.

Guérin, Pierre Narcisse, Baron (1774-1833), Fr. historical painter, b. Paris. He studied under Regnault and in Rome and became an adherent of the neo-classic style. In 1799 he exhibited his 'Return of Marcus Sextus,' in which he reached the highest point of his art. In 1803 he received the cross of the Légion d'Honneur, and in 1816 was appointed director of the Fr. school at Rome. His chief works are 'Hippolytus and Phaedra,' 1802, 'The Revolt of Cairo,' 1806, 'Pyrrhus and Andromache,' 1810, 'Aeneas and Dido,' 1817, 'Clytemnaestra,' 1817, 'Ulysses,' and 'Death of Marshal Lannes.'

Guernica, Sp. tn in the prov. of Vizcaya, on an inlet of the Bay of Biscay. It is a historic Basque tn, and the oak tree near which the traditional liberties of the Basques (q.v.) used to be affirmed still stands. During the Civil war, on 27 April 1937, G. was severely bombed by Ger. aeroplanes supporting the insurgents. Pop. 5000. See BASQUE PROVINCES.

Guernons, see CERCOPIITHEOUS.

Guernsey, second in size of the Channel Isles, lies 30 m. from the coast of Normandy. It is triangular in form, with an area of 25 sq. m., and its surface slopes from S. to N. The climate is mild and healthy, and the soil, when manured, is very fertile. The chief crops are tomatoes under glass, luxury fruits such as melons, grapes, and figs, also early vegetables and flowers, all of which are extensively exported. The is., too, produces a famous breed of cattle, renowned for the richness of the milk; also a special sort of granite almost unrivalled for paving. The chief tn is St Peter Port (q.v.) where there is an airfield. At the end of June 1940, after the collapse of France, G. and the other Channel Is. were completely demilitarised,

the troops withdrawn, and large numbers of the civilian pop. arrived in Britain, while everything of value to the enemy was removed. On the same evening Ger. aeroplanes bombed and machine-gunned the is., 23 persons being killed and a number injured. Afterwards the Germans took possession of the is. and fortified it heavily. It was liberated in 1945. At the latter end of the year a committee of the privy council, led by the home secretary, visited the is. for the

is now grown in many variations of colour.

Guerrazzi, Francesco Domenico (1804-1873), It. writer and patriot, b. Leghorn. His first pub. work was *Battaglia de Benevento*, 1827, an historical novel which is remarkable for its exquisite expression; his *Assedio di Firenze* was written while he was in prison at Ponto-ferrato, 1834. This is perhaps his most important work, and tells of the downfall of the rep. of Florence. In 1848 he became a minister,



States Tourist Committee, Guernsey

LITTLE CHAPEL AT LES VAUXHELETS,
GUERNSEY



British Railways

STATUE OF VICTOR HUGO
IN CANDIE GARDENS, GUERNSEY

purpose of considering the constitution and making recommendations that might be considered by the states of the is. with a view to bringing their ant. laws into line with modern ideas. After long and considered study the is. decided to adopt most of the suggestions. Pop. 43,500. See T. D. Kendrick, *The Archaeology of the Channel Islands* (vol. 1, *The Bailiwick of Guernsey*), 1928; C. P. Le Huray, *The Bailiwick of Guernsey*, 1952. See further under CHANNEL ISLANDS.

Guernsey Breed, see CATTLE.

Guernsey Ladies' College, founded in 1872 with advice from Miss Beale (q.v.). Though boarders were taken for a time, since 1945 it has been a day school, and has a separate junior school.

Guernsey Lily, or *Nerine sarniensis*, Cape plant belonging to the family Amaryllidaceae. The flowers are of a delicate rose-pink, flecked with gold. It

and in 1849, when the grand duke of Tuscany fled, he was proclaimed member of the provisional gov., and subsequently dictator. After the restoration, however, he was banished to Corsica. His other works, mostly historical and political novels, are *Isabella Orsini*, 1845, *Beatrice Cenci*, 1854, and *L'Asino*, 1857.

Guerrero, const. state of Mexico, between the R. de las Balzas-Mexcala and the Pacific. It is very mountainous, reaching 12,149 ft in the Cerro Teotépec, and has great mining potentialities, the minerals found here being silver, gold, mercury, lead, iron, coal, sulphur, and precious stones. The agric. products are cotton, coffee, tobacco, dyewoods, and cereals. Cap. Chilpancingo; chief port Acapulco (q.v.). Area 24,890 sq. m.; pop. 920,000.

Guesclin, Bertrand du (c. 1320-80), constable of France, b. in Brittany. He fought for Charles of Blois at Vannes in

1342, and distinguished himself against the Eng. at Rennes, 1356, and Dinan, 1357. In 1359 he took Melun and freed the Seine from the Eng., and in 1364 won the battle of Cocherel, but was taken prisoner by Sir John Chandos at Auray. On being released he fought against Pedro the Cruel, but was defeated and taken prisoner by the Black Prince, 1367. He was later ransomed and defeated and captured Pedro in 1369, and in 1370 was made constable of France by Charles V, with the result that in a few years nearly all the Eng. possessions were in the hands of the Fr.

Guest, Lady Charlotte, afterwards **Schreiber** (1812-95), daughter of the 9th earl of Lindsay, pub. sev. old Welsh MSS. of which the best known was *The Mabinogion*, 1838-49. This did much to stimulate interest in Celtic literature; and G. also helped to revive the Welsh Eisteddfod. She was also a noted collector of rare fans, china, etc.

Guest, Edwin (1800-80), historical writer, b. King's Norton, Worcestershire. He was educ. at King Edward VI's Grammar School, Birmingham, and Calus College, Cambridge, and was made a fellow of Calus in 1824. His first pub. work was the *History of English Rhythms*, in 1838, the second ed. of which appeared in 1882 ed. by Prof. Skeat. G. was practically the founder of the Philological Society, and was secretary in 1842.

Gueux, Les, or The Beggars, name assumed by those who rebelled against Sp. rule in the Netherlands in the 16th cent. They formed themselves into an association in 1565 and presented a petition to the regent, Margaret of Parma, 1566. When the regent hesitated to receive them, one of her councillors asked her what she had to fear from mere 'beggars' (*gueux*). The word was remembered and the party adopted it as an honoured title. They maintained a vigorous warfare against Philip II for some time, and though finally suppressed by the duke of Alva had helped, by their fight, to estab. the Dutch rep. 'The Beggars of the Sea,' under Count de la Marck, did much damage to the Sp. fleet and captured Brielle in 1572, a victory which ultimately resulted in the independence of the Netherlands in 1648.

Guevara, Antonio de (c. 1480-1545), Sp. theologian and historian, b. Viscaya. His early years were passed at the court of Isabella, but in 1528 he entered the Franciscan order and subsequently became historiographer and court-preacher to Charles V. In 1529 he pub. his *Relax de principes*, a didactic novel professing to be a life of Marcus Aurelius. This work has been trans. into Lat., Italian, Fr., and Eng., and reprinted sev. times in Spanish. He also wrote *Decada de Césares*, 1539, and *Epistolae Familiares*, 1539-45. G. had considerable influence upon the Sp. prose of the 16th cent., and his bombastic style may be compared with the euphuism of Lyly, who may have taken G. as his model. See R. Costes, *A. de Guevara, sa vie, son oeuvre*, 1925.

Guevara, Luis Velez (1570-1644), Sp. dramatist and novelist, b. Ecija, Andalusia. He practised as an advocate for some years, but came under the notice of Philip IV, and was appointed court chamberlain. He wrote a great number of plays, of which *Reinar después de morir*, *Mds pesa el rey que la sangre*, *La Luna de la Sierra* are the best; but he is chiefly famous for his fantastic novel, *El Diablo cojuelo*, 1641, which is the basis of Le Sage's *Diable Boiteux*, 1707.

Guglielmi, Pietro (1728-1804), It. musical composer, b. Massa di Carrara. He studied under Durante and produced his first operatic work at Naples in 1757. In 1769-72 G. was in London, where he produced operas and pub. some chamber music. On his return to Italy he found Paisiello and Cimarosa estab. as favoured rivals. In 1793 he became musical director at the Vatican. He wrote about 100 operas, 5 oratorios, and 12 cantatas.

Guiana, see BRITISH GUIANA; NETHERLANDS GUIANA; FRENCH GUIANA.

Guibert of Nogent (c. 1053-1124), historian and theologian, b. Clermont-en-Beauvoisis. In 1104 he was chosen head of the abbey of Notre Dame de Nogent-sous-Coucy. His autobiography (Eng. trans. by C. Swinton, 1926) contains a vivid picture of his age, and it was he who described the crusades in the celebrated words *Gesta Dei per Francos*.

Guicciardini, Francesco (1483-1540), It. historian and statesman, b. Florence and educ. at the univs. of Ferrara and Padua. A cynical realist, he became a diplomat and statesman under various masters, serving them competently, even when his own views were in conflict with theirs. He was ambitious, a time-server, and a place seeker. In 1515 Leo X took him into service and made him governor of Reggio and Modena. In 1521 Parma was added to his rule; and in 1523 he was appointed vice-regent of Romagna by Clement VII. These rendered him virtual master of the papal states beyond the Apennines. In 1526 Clement made him lieutenant-general of the papal army. In 1531 he was advanced to the governorship of Bologna. Later G. was employed by the Medici; but a few years before his death he retired from public life to spend his last years in the composition of the *Storia d'Italia*, 1490-1532 (Eng. trans. 1755-9) which remains a most valuable record of It. Renaissance hist., though coloured by its author's personal prejudices. See V. Luciani, *Francesco Guicciardini and his European Reputation*, 1936.

Guide-books, term first used in 1823 to describe small books for the guidance of strangers in a dist., tn, building, etc. Documents naming stages on the Rom. Imperial roads (e.g. the *Antonine Itinerary*, c. AD 300) are of much greater antiquity. They were followed during the Middle Ages by compilations of varying length for the guidance of pilgrims to the Holy Land, Rome, Compostella, and other centres of devotion. But G. in the present sense of the

term are of comparatively recent origin. In 1820 the publisher John Murray II (1778-1843) issued Mrs Mariana Starke's *Information for Travellers on the Continent*, and his son John Murray III (1808-92) was thus inspired to launch *Murray's Handbooks*, a series of G. which covered a great part of the world. The famous series of G. pub. by Karl Baedeker (q.v.) were modelled on Murray's and had a similarly wide range. Such series as Michelin, Nagel, Guide Bleu (also pub. in Eng.), and such Brit. G. as the *Gateway, County, Ward Lock's*, and *Everyman* series, assist the foreign and native tourist. Many local authorities in Britain and abroad now issue G. for tourists, and numerous descriptive accounts of places of interest are available. Specialised G. are issued by mountaineering, cycling, motoring organisations, the National Trust, and the Stationery Office (q.v.).

Guidi, Alessandro (1650-1712), It. poet, b. Pavia. He is important as being the chief founder of the *Accademia dell'Arcadia* in Rome. He is essentially a lyric poet, his songs being written with singular force and charm, though often excessive pomp. The most beautiful perhaps is *Alla Fortuna*. He also wrote *Amalasunta in Italia*, 1681, a lyric tragedy, and *Dafne*, 1689, and *Endimione*, 1692, 2 pastoral dramas.

Guidi, or Guido, Tommaso di Giovanni di, see MASACCIO.

Guido d'Arezzo, or **Guido Aretinus** (c. 990-c. 1050), musical theorist and teacher, a monk in the Benedictine monastery of Pomposa, where he taught singing; he is, rather doubtfully, credited with the invention of the musical staff, the use of which he certainly encouraged. He adapted the names ut, re, mi, fa, sol, la for the hexachord (q.v.), thus founding the system of solmisation (q.v.). His doctrines are explained in his *Micrologus*.

Guido Reni, commonly called **Guido** (1575-1642), It. painter, b. Calvenzano, near Bologna. He studied under Denis Calvaert, but afterwards entered the studio of the Carracci, one of whom he accompanied to Rome. Here he came under the influence of Caravaggio, and also began to study the works of Raphael, and soon afterwards painted 'Aurora preceding the Chariot of Apollo,' which is usually considered his greatest work. He spent some time in Naples in 1621, and began his famous picture the 'Nativity,' and also visited Bologna and the other towns of N. Italy. As a painter he is remarkable for the purity of his colouring and his dramatic force, while as an engraver he was bold and free in execution; but for modern eyes his work is marked by too much of a rhetorical and sentimental element.

Guidonian Syllables, in music, are those which were used by Guido d'Arezzo (see above) for his hexachords (q.v.). They were ut, re, mi, fa, sol, la. See SOLMISATION.

Guienne, see GUYENNE.

Guild Socialism, Brit. variant of syndicalism (q.v.). The movement was begun in 1906 under Hobson and Pentty to bring about the restoration of the medieval

guild system on modern lines. The trade unions were to be organised as guilds to control their respective industries after they were nationalised. In 1915 the National Guilds League was formed and many trade unions joined it. Five years later the National Guild Council was formed and a building guild was organised to carry out an ambitious plan, formulated by the council to erect houses. The collapse of this scheme ended the league, which was dissolved in 1925. See G. D. H. Cole, *Guild Socialism Restated*, 1927.

Guilder, monetary unit of the kingdom of the Netherlands, including overseas territories. In the 13th cent. it found its way from Florence to N. Europe, where it has also been in use under the name G. (florin) in Germany and Austria. It consists of 100 cents, and after the devaluation of the pound sterling in 1949 its gold valuation decreased to 0.23386 grams of fine gold. At the present rate of exchange the G. is equivalent to approximately 2s. See METROLOGY.

Guildford, municipal bor. and co. tn of Surrey, England, 30 m. SW. of London, in a beautiful rural area. G. lies on the R. Wey, in a gap in the North Downs, with the Hog's Back to the W. and the Merrow and Dorking Downs to the E. Its growth as an urb. and mkt centre has endowed it with many fine buildings, the most important being the Edward VI or Royal Grammar School, the Hospital of the Blessed Trinity, founded by George Abbot, archbishop of Canterbury, in 1619, and the guildhall with its 17th-cent. front and projecting clock. An inscription over the gate attributes the foundation of the Royal Grammar School to Edward VI in 1552, but the real founder was Robert Beekingham (d. 1528), and the present building was begun about 1557. There was a guildhall in the time of Edward III, probably on the site of the present building. The latter was considerably enlarged in 1588. The bronze standard corn measures were presented by Queen Elizabeth I. The tn is dominated by the ruined Norman keep, dating from the 12th cent., once part of a private royal residence.

The oldest church, St Mary's, dates from Saxon times, and contains some medieval wall paintings. G. cathedral, in course of erection, is only the third entirely new Anglican cathedral to be built in England since the Reformation. In 1927 Winchester diocese was divided into 3—Winchester, Portsmouth, and G.—and since then the church of the Holy Trinity has served as the pro-cathedral pending the building of the new cathedral, the foundation stone of which was laid by the archbishop of Canterbury on 22 July 1936. The cathedral, designed by Sir Edward Maufe, is on a splendid site on Stag Hill, given by the earl of Onslow. A church has stood on the site of the pro-cathedral since the 12th cent., but in 1740 the old tower fell, necessitating rebuilding. In the S. chapel is the tomb of Archbishop Abbot, which survived. The clock has an unusual set of chimes, varying every

quarter of an hr. Other churches are St Nicholas on the W. of the riv. crossing, built in 1875, and St Martha's, just outside the bor. on a hill which was known as Martyrhill from the tradition that early Christian martyrs suffered there.

The origin of the name G. is not certainly known. It is most probably derived from a Saxon word meaning 'golden.' It is identified by Geoffrey of Monmouth with Astolat, famous

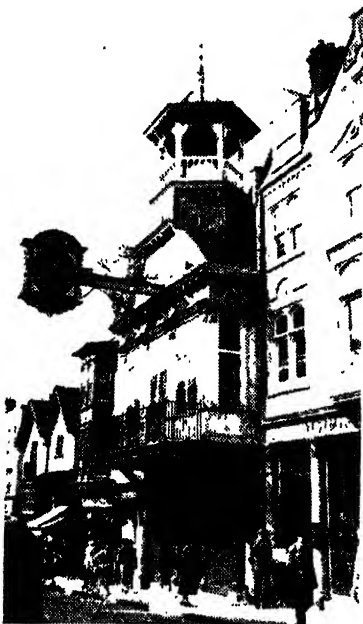
Assizes. Thirteen other royal charters are on record. The bor. aldermen derive the practice of wearing scarlet gowns from the 1686 charter of James II. The corporation plate is particularly fine; it includes a 15th-cent. mace, another given in 1663, and a mayoral gold chain given in 1673. The bor. arms, granted about 1485, include 2 wool packs, referring to G.'s importance as a cloth tn in medieval and Tudor days. G. was a parl. bor. from 1295 to 1884, returning 2 members for most of this period. It now gives its name to one of the co. constituencies. Pop. 49,000.

Guildhall, the council hall of the Corporation (governing body) of the city of London. An important hall has existed on this site probably since the 11th cent., and an early crypt survives. A new building, erected 1411-26, survived with considerable restorations and additions at various periods until the Great Hall, Alderman's Court Room, and Common Council Chamber were destroyed in the air raid of 29 Dec. 1940. A new Great Hall was completed in 1954 to the designs of Sir Giles Gilbert Scott (q.v.) The Great Hall is the scene of ceremonial banquets, etc., and it is the custom of the lord mayor of London, just after his election in Nov., to give a public dinner there attended by ministers of the Crown and other dignitaries (the first recorded dinner is that given in 1500). It has been used for important trials, among them those of Lady Jane Grey and Archbishop Cranmer. In the range of G. buildings there are an extensive library and an art gallery. See also GOG AND MAGOG.

Guilds, or Gilds (O.E. *gild* = payment), originally a general term implying some form of association. The A.-S. *frithgild*, for example, was an association of families, with mutual aid and protection as its prime purpose. Evidence exists, though much of it is fragmentary, pointing to the existence of G. in England and W. Europe with a primary religious motive, i.e. associations of individuals grouping together to pay for masses for the dead, etc., long before the period of the Norman Conquest, and sev. of these associations undoubtedly based their membership on trade relationships.

In England the 12th cent. provides striking evidence of the organisation of groups of merchants into G. for the furtherance and protection of their trading interests, and the term 'guild' is now generally taken to refer only to these medieval trading G., though, throughout the Middle Ages, G. of a more exclusively religious character continued to exist in England and on the European Continent. The crown soon acted to control the growth and power of G. and in 1180, under Henry II, 18 G. were amerced (i.e. fined) for having been set up without licence.

Two of these G. are still represented by ivy companies: the Butchers' and the Goldsmiths'. While these merchant G. and the craft G. (associations of craftsmen which subsequently became even more powerful than the merchant G.)



Keystone

GUILDFORD: THE GUILDHALL

Arthurian legend. The first certain information is in the will of Alfred the Great, AD 900, when he bequeathed the tn to his nephew Ethelwold, on whose rebellion it reverted to the crown. From 978 to 1100 G. was one of the seats of the royal mint, and coins struck here still exist. The castle was a favourite residence of the medieval kings, particularly Henry III. His queen, Eleanor of Provence, was regarded as foundress of the Dominican Friary; the name survives in Friary Street.

The earliest known charters of G. are dated 1257; they grant the tn (already mentioned as a bor. in 1130) certain standard privileges and also make it the seat of the co. court, and the Surrey

Sometimes considered as a separate species (*Cavia cobaya*), the familiar common cavy is probably a domesticated form of the *O. aperca* of Guiana and Brazil, introduced by the Dutch into Europe in the 16th cent. The domesticated kinds are mostly white, or marked with yellow and black, or tawny-coloured. They have short limbs, the fore-feet having 4 toes, the hind feet only 3. Their ears are short and rounded and they have no tails. G.s are very prolific, producing young 5 or 6 times a year. They are much used in bacteriological laboratories for the study of germ diseases.

Guinea-worm, or *Dracunculus medinensis*, a species of threadworm and found as a parasite in the tropics under the human skin, especially of the legs, causing the disease known as dracontiasis (*Ok drakon*, a snake). The worms are the thickness of horse hairs, and measure from 1 or 2 to 6 ft in length. The adult female worm most frequently harbours in the subcutaneous tissues, especially of the arm and leg, and causes an irritating skin rash, vomiting, diarrhoea, and shortness of breath. The larvae are discharged from the skin when in contact with water, where they are then devoured by a species of minute crustacean, in which further development of the larvae occurs. Infection of the human host results from swallowing infected crustaceans in drinking water.

Guinegatte (*Enguinegatte*), Fr. vil. in the dept of Pas-de-Calais, near St-Omer. Here, in 1479, Maximilian of Austria defeated Louis XI, and here also, in 1513, the Fr. were put to flight so precipitately by the Eng. and the imperial army that the day was called the 'Battle of the Spurs.'

Guines, Fr. tn in the dept of Pas-de-Calais, 7 m. S. of Calais. Between G. and Ardres (q.v.) took place in 1520 the meeting of the Field of the Cloth of Gold (q.v.). The tn has breweries. Pop. 4300.

Güines, city of Havana prov., Cuba, on R. Mayabeque, 28 m. SE. of Havana. The tn is flourishing, with many modern institutions, and stands in a fertile plain. Products: sugar, tobacco, etc. Pop. 22,600.

Guinevere, **Guinever**, or **Guenever**, corrupt form of Guanhumara (Welsh *Gwenhwyfar*), anc. Brit. queen, daughter of King Leodograunce of Camelyard, and wife of King Arthur. She was the most beautiful of women and cherished a guilty love for Sir Lancelot of the Lake, one of the Knights of the Round Table. According to Geoffrey's *History of Britain*, during King Arthur's absence against Leo, king of Rome, she married his nephew Modred, who had usurped the kingdom left in his charge by Arthur. Arthur returned and defeated Modred at Cambula, a battle fatal to both leaders, while G. fled from York to the nunnery of Julius the Martyr at Newport in S. Wales. According to Malory, Arthur had gone to Brittany to punish Lancelot when Modred usurped the kingdom and attempted to marry G.

She, however, shut herself up in the Tower of London, and on hearing of Arthur's death went into a nunnery at Almesbury. Tennyson, in the *Idylls of the King*, makes Modred discover the relationship between G. and Lancelot. The latter flung Modred to the ground and took to horse, while the queen fled to Almesbury where Arthur came to take leave of her.

Guiney, **Louise Imogen** (1861-1920), Amer. poetess and essayist, b. Boston. After 6 years in a convent she became a journalist, later worked in the cataloguing dept of Boston Public Library, and in 1895 went to England and studied at the Bodleian. She first won notice with *Songs at the Start*, 1884, and *Goose Quill Papers*, 1885. The best of her criticism is contained in *A Little English Gallery*, 1894, and *Happy Ending*, 1909, collects all of her verse that she wished to preserve. Her *Letters* were pub. in 1926.

Guingamp, cap. of arron. in the dept of Côtes-du-Nord, France, on the R. Trieux, 52 m. W. of St Malo. From the 14th to the 17th cent. it was the cap. of the duchy of Penthièvre. The medieval church of Notre Dame de Bon Secours is a great resort of pilgrims. Pop. 9100.

Guinizelli, **Guido** (c. 1230-76), It. poet, b. Bologna, where he studied and practised law. In 1274 he was exiled as one of the Ghibelline Lambertazzi party, and d. in exile. Only 7 canzoni and 5 sonnets by him are extant, the best known being the canzone, *Al cor gentil ripara sempre amore* (trans. by G. D. Rossetti), which is praised by Dante, who called him 'il padre mio.' They are printed in a collection pub. at Florence by Nannucci in 1843.

Guinness: 1. *Arthur* (d. 1855), brewer; head of the firm of Arthur G. & Sons, of Dublin. He married Anne, daughter of Benjamin Lee.

2. *Sir Benjamin Lee* (1798-1868), 3rd son of the above, b. in Dublin and succeeded his father as head of the firm, which he managed with the greatest success. In 1851 he became 1st lord mayor of Dublin, and during 1860-5 restored St Patrick's Cathedral at a cost of £150,000. In 1863 he was made an LL.D. of Dublin Univ.; in 1865 was elected M.P. for the city in the Conservative interest, and in 1867 was created a baronet.

3. *Sir Arthur Edward* (1840-1915), eldest son of the above, succeeded to the baronetcy, and in 1880 was created Lord Ardilaun (q.v.).

4. *Edward Cecil* (1847-1927), 3rd son of Benjamin Lee, was created a baronet in 1885, Baron Iveagh in 1891, and Viscount Iveagh in 1905.

See also **IVEAGH**, **EARL OF**.

Guinness, **Alec** (1914-), Brit. actor, b. London; educ. at Pembroke Lodge. He made his stage début walking on in *Libel* in 1934. London stage appearances include *Hamlet* in modern dress at the Old Vic in 1938, another season with the Old Vic, 1946-7, and *The Prisoner* (which he later filmed). His first film was *Great Expectations*, 1946; he also appeared as

Fagin in *Oliver Twist*. Nearly all his subsequent films have been comedies, including *Kind Hearts and Coronets*, *The Lavender Hill Mob*, *The Man In The White Suit*, *The Card*, *The Captain's Paradise*, *Father Brown*, *The Ladykillers*, and *Barnacle Bill*. In 1958 G. won the Hollywood 'Oscar' for his performance in *The Bridge on the River Kwai*.

Guinobatan, tn in Albay prov., Luzon, Philippine Is. It grows coconuts and rice. Pop. 32,280.

Guipúzcoa, Sp. prov., the smallest of the Basque provs. (q.v.), on the Bay of Biscay and the Fr. frontier. It is densely populated. There are numerous mineral springs, zinc is found, and textiles, chemicals, glass, paper, and leather goods are manufactured. Stock-raising and fishing are important. The cap. is San Sebastián (q.v.). Area 728 sq. m.; pop. 385,450.

Guiraud, Ernest (1837-92), composer, b. New Orleans, of Fr. parentage; studied at Paris and Rome. He served in the Franco-Prussian war (q.v.), and in 1876 became prof. of harmony and accompaniment at the Conservatoire. His operas include *Le Roi David*, 1852, *Sylvie*, 1864, *En Prison*, 1869, *Le Kobold*, 1870, *Mme Turlupin*, 1872, *Gretna Green*, 1873, *Piccolino*, 1876, *Galante Adventure*, 1882. He also wrote sev. cantatas, overtures, etc., and wrote recitatives for Bizet's *Carmen* and Offenbach's *Contes d'Hoffmann*, also finishing the orchestration of the latter.

Guiraut de Bornell (fl. c. 1170-c. 1220), Provençal troubadour, b. Excideuil (modern Dordogne), and accompanied Richard I of England to the 3rd crusade. About 50 love poems by him, written to a lady of Gascony, are extant, and are distinguished by simplicity and directness. He was known as 'Master of the troubadours,' and is praised by Dante for his moral seriousness. See A. Kolsen, *Guiraut de Bornell, der Meister der Trobadors*, 1894; *Sämtliche Lieder des Trobadors G. de Bornell*, 2 vols., 1910, 1935; J. J. Salverda de Grave, *Observations sur l'art lyrique de G. de Bornell*, 1938.

Guisborough, mrkt tn of N. Riding, Yorks, England, situated in the valley of Cleveland, 9 m. ESE. of Middlesbrough. Steel founding and agriculture form the main industries, and G. has the ruins of an Augustinian priory, founded in the early 12th cent. Pop. 7000.

Guiscard, or Wiscard, Robert (1015-1085), 1st Norman duke of Apulia and Calabria, b. near Contances, Normandy; a son of Tancred of Hauteville. He went to Italy as a pilgrim, and raised a band of adventurers to fight the Greeks and Calabrians. He was soon joined by many Normans and was very successful. In 1060 he captured Reggio and Cozenza, and accordingly obtained from Nicholas II the investiture of Apulia and Calabria. He and his brother Roger were the papal champions in S. Italy and Sicily against the Greeks and Saracens. In 1081 he invaded the Byzantine Empire and defeated the emperor, Alexius Comnenus,

at Durazzo. He hurriedly returned to Italy to protect the pope, Gregory VII, from the Emperor Henry IV, and later went back to the E., dying in Cephalonia.

Guise, or Guyse, Dukes of, ducal family of Lorraine, France, named from the tn of G. (q.v.). **Claude of Lorraine** (1496-1550), the 1st duke, b. at the Château de Condé, being the 5th son of René II, duke of Lorraine. He married Antoinette de Bourbon 1513; joined the army and fought at Marignano (1515), and was created duke of G. by Francis I for suppressing the Anabaptist revolt in Lorraine in 1525. **Francis of Lorraine** (1510-63), the 2nd duke, was the son of Claude, and became a great military commander and leader of the Catholics. In 1552-3 he defended Metz against Charles V of Germany; in 1554 fought at Rentli, and in 1556 commanded the expedition against Naples. In 1557 Henry II made him lieutenant-general of the kingdom, and in 1558 he took Calais from the Eng. and brought about the treaty of Câteau-Cambrésis in 1559. He and his brother Charles, cardinal of Lorraine, were ruthless in suppressing the Protestants, and defeated the conspiracy of Amboise, taking its leader, the duke of Condé, captive at Dreux in 1562. He was assassinated by a Huguenot at the siege of Orleans. **Henry of Lorraine** (1550-88) (Balafré), the 3rd duke, was the son of Francis, and succeeded him as the leading opponent of Fr. Protestantism. He fought at Poitiers, Jarnac, Moncontour (1569), and Dormans, was concerned in the massacre of St Bartholomew (1572) and in the murder of Coligny. In 1576 he became head of the Catholic League. Becoming too ambitious, he was assassinated at Blois by the order of Henry III. **Charles IV of Lorraine** (1571-1640), 4th duke, was imprisoned at Tours on the assassination of his father, Henry, in 1588. He escaped in 1591 and entered the service of Henry IV, gaining a victory at Marcellles in 1596. He was banished by Richelieu in 1631. **Henry II of Lorraine** (1614-64), 5th duke and prince of Joinville, b. at Blois, son of Charles IV. In 1629 he became archbishop of Rheims and in 1640 succeeded to the dukedom. In 1641 he joined the conspiracy of the count de Soissons against Richelieu and was condemned to death, but escaped to Flanders. In 1647 he joined the Neapolitan revolt against Spain, but was taken as a prisoner to Madrid. He escaped in 1652, again attempted to win Naples in 1654, and became high chamberlain of France in 1655. The ducal line became extinct at the death of **Francis Joseph of Lorraine** (1670-5), the 7th duke. It was revived for John (1874-1940), son of the duke of Chartres, pretender to the Fr. throne from 1926. On his death he was succeeded by his son, better known as the count of Paris (b. 1908).

Guise, Mary of, see MARY OF GUISE.

Guise, Fr. tn in the dept of Aisne, on the Oise. It is an ant. fort. tn, and gave its name to the family of G. (q.v.). It was the scene of 2 battles in the First World

War. The tn has flour and textile manufs., and the famous profit-sharing ironworks of M. Godin, which are run on the principles suggested by F. M. Fourrier (q.v.). Desmoulins (q.v.) was b. at G. Pop. 6000.

Guiseley, par. and vil. of W. Riding of Yorks, England, 2 m. SW. of Otley. Tweeds and other woollen goods are manufactured. G. has a Norman church (mid 12th cent.) in which are kept fragments of Anglian crosses of the 9th cent. The Rectory Hall in its present form was reconstructed in 1601 (restored 1910). Pop. 6000.

Guitar (Sp. *guitarra*), stringed musical instrument. It has a flat soundboard made of pine, with a large sound-hole; a flat back, made of maple, ash, or cherry-wood, and joined to the soundboard by ribs and curving sides. There are 6 strings, 3 of gut and 3 of wire-covered silk, which extend from the bridge, which is of ebony, to the end of the finger-board, from which the head is bent back at an obtuse angle. The strings are tuned to the notes E, A, D, G, B, E, in the treble clef, but they are produced an octave lower than written. The instrument is played by plucking at the strings with the thumb and 3 fingers of the right hand, while the fingers of the left hand press the strings to regulate the intervals.

Guiterman, Arthur (1871-1943), Amer. poet, b. Vionna of Amer. parents. Educ. at the College of the City of New York, he became a freelance writer, and pub. many vols. of popular light verse; they include *The Laughing Muse*, 1915, *The Mirthful Lyre*, 1918; *Ballads of Old New York*, 1920, *Song and Laughter*, 1929, *Death and General Putnam*, 1935, *Gaily the Troubadour*, 1936, and *Brave Laughter*, 1943.

Guitry, Lucien-Germain (1860-1925), Fr. actor, b. Paris; first appearance, 1878; married in London, 1882. He spent 9 years in St Petersburg and returned to Paris, 1891, acting at the Odéon, Grand, and Porte-St-Martin theatres. In 1900 he appeared as Coupeau in *L'Assommoir*, and in 1902 and 1909 in London theatres. He played the cock in Rostand's *Chantecler*, 1910. He played in *Le Juif polonais* and *L'Aiglon*, and represented Crainquebille in Anatole France's play of that name.

Guitry, Sacha (1885-1957), Fr. playwright, actor, and film director; b. St Petersburg, where his father, Lucien G. (q.v.), was director of the Théâtre Michel. He went to Paris at the age of 6, where, at 17, he joined the company of the Renaissance Theatre. Nine years later G. started acting exclusively in his own plays, nearly always taking the main part himself. His first known play, *Nono*, was produced in 1905. He wrote over 100 pieces, mostly witty comedies, including *Deburau*, 1918, *L'Amour masqué*, 1923, and *Un Miracle*, 1927, in all of which, except about half a dozen, he acted, being indeed almost a necessary item in their interpretation. Two of those in which he did not appear are serious plays, *Jacqueline*, 1921, and *Un Sujet de roman*, 1923; in the latter his father appeared.

In 1919 G. became the manager of his own theatre in Paris. His best-known films are *Le Roman d'un tricheur*, 1936, *Les Perles de la couronne*, 1937, and *Napoléon*. He was married 5 times, Yvonne Prin-temps being his second wife.



Nick de Norgolt

SACHA GUITRY

Guittone D'Arezzo (c. 1225-1294), It. poet, b. in Tuscany. In his youth he wrote mainly love poems, *canzonetti*, and sonnets, imitating the style of the Provençal troubadours. About 1260 he became converted, and entered the order of the *Frati gaudenti*; thereafter his poetry is chiefly religious. He also wrote some 35 letters, a few of them in verse, mostly moral exhortations. As a poet he ranks high as one of the founders of It. literature, being one of the first to give polish and regularity to the sonnet. He is mentioned by both Dante and Petrarch (qq.v.). See A. Pelizzari, *Vita e opere di Guittone d'Arezzo*, 1907.

Guizot, city of Samar Is., belonging to the Philippine group. It is situated in the S. of the archipelago. It grows coconuts, and is the site of a U.S.A. naval base. Pop. 27,202.

Guizot, François Pierre Guillaume (1787-1874), Fr. historian and statesman, b. Nîmes, of Protestant family. His father d. on a scaffold during the revolution and the family fled to Geneva, where G. was educ. In 1805 he went to Paris to study law, but in 1812 he became modern hist. prof. at the univ. of France. The same year saw the pub. of his trans. of Gibbon's *History*. In 1815 he became secretary for the interior and was promoted the following year to the State Council. During the next few years he led the 'Doctrinaire' party, but on the

break-up of the Decazes ministry (1821) he was stripped of office, and a year or two later was forbidden even to lecture. During this period he produced his *History of the English Revolution*, vols. i-ii, 1826-7; *History of Civilisation in Europe*, 1828; and the *History of Civilisation in France*, 1829-32; all of which have appeared in Eng. trans. In 1830 he returned to public life as deputy for Lisieux (Normandy), and after the July revolution became a cabinet minister, being finally promoted, when the Cabinet was reorganised (1832), to minister of education. In 1840 when his rival Thiers became foreign minister, G. came to London as ambas., but returned to Paris soon after to take Thiers's place. In 1847 he became Prime Minister, but became involved in an intrigue over the 'Sp. marriages' question, which only succeeded in causing bad feeling between England and France. The revolution of 1848 was largely due to his iron-handed firmness in carrying out his schemes and his refusal to yield to popular pressure; after this he took no further part in political life, but retired to his home at Lisieux and concentrated on literary work. The first 8 years of his retirement were occupied in the completion of his *History of the English Revolution*, vols. iii-viii, 1850-6; and his *Mémoires* appeared in 9 vols., 1858-68. G.'s writings, while lacking style and considerably influenced by his own political philosophy, are based on considerable research and remain of substantial historical value to-day. See G. Bardoux, *Guizot*, 1894; M. Guizot, *Les années de retraite de M. Guizot*, 1901; and C. H. Ponthas, *Guizot pendant la Restauration*, 1814-30, 1923.

Gujarat, in its widest sense, denotes the whole region in India in which the G. language is spoken; in its narrower and more correct sense it applies to the central plain eastward of Cutch and Kathiawar. The region contains parts of the W. Ghats and the Vindhya and Satpura Mts. and is watered by the Tapti, Nerbudda, and Mahi R.s.

Gujranwala, tn of W. Pakistan. The tn is situated on the Grand Trunk road, 40 m. N. of Lahore. It is particularly known as the bp. of Ranjit Singh (1780), and his ashes were deposited in the *Samadh* of Mahan Singh, his father. G. is also noted for the manuf. of iron safes.

Gulrat, tn in W. Pakistan, 72 m. NW. of Lahore. Founded in the time of Akbar (1556-1605), it stands on the site of 2 much older cities. Together with the surrounding country it was acquired by the Sikhs in 1765. Here on 21 Feb. 1849 Sir Hugh (later Lord) Gough defeated a Sikh army of 60,000 men, the victory leading to the capture of G., then a Sikh fortress, and the surrender of the Punjab.

Gulbarga, tn in Hyderabad state, India, a trade centre. It was originally a Hindu city, and was later the cap. of the Bahmani kings (1347-1432), and still contains the ruins of the palaces and tombs of these kings. There is also the

ruin of an old fort, containing a fine mosque.

Gulden, see **GUINER**.

Gulf, tract of the sea extending into the land similar to, but larger than, a bay.

Gulf Stream, ocean current in the North Atlantic. It issues from the gulf of Mexico, which gives it its name, being formed from the warm waters of the equatorial current, and flows out northward through the gulf of Florida and along the E. coast of North America, from which it is separated by the 'cold wall,' a narrow strip of cold water. It is early joined by another current coming from outside the West Indies. When leaving the gulf the G. S. is from 50 to 100 m. wide and 2000 ft deep, and moves with an average velocity of 80 m. a day. Its temp. is then about 80° F., but as it flows northwards the temp. drops, and the current becomes broader and less rapid. At a point off Newfoundland it merges into the G. S. Drift, which flows eastward across the Atlantic, and later divides into 2 branches which flow N. and S. respectively. The warm waters of the N. branch help to ameliorate the climate of W. Europe.

Gulfpot, port for the Pearl R. customs dist., situated in Mississippi, U.S.A., 13 m. from Biloxi. It has saw-mills and canning factories. Pop. 22,659.

Gulfweed, floating seaweed, *Sargassum baccifurum*, found in large quantities in the Sargasso Sea. The Gulf Stream carries it northwards from the Gulf of Mexico. It has small, bladder-like fruits.

Gull, Sir William Wither (1816-90), physician, b. Colchester, Essex; educ. at Guy's Hospital, London. From 1847 to 1849 he was Fullerman prof. of physiology at the Royal Institution of Great Britain, and from 1856 to 1865 a physician and lecturer at Guy's Hospital. He was made a baronet and appointed physician to the queen in 1872. His numerous works, which have been ed. by T. D. Acland, 1894-6, include *Gulstonian Lectures on Paralysis*, 1849, *Report on Cholera*, 1854, *Hypochondriasis*, *Abscesses of the Brain*, 1854, and a memoir.

Gull (Welsh *gryllan*), name applied to a group of sea-birds, members of the div. Larinae of the family Laridae. Under the most recent classification 49 species of G.s are admitted and these are placed in 5 genera: *Pagophila* (the Ivory G.) and *Rhodostethia* (which has a small bill and wedge-shaped tail), in each of which there is only 1 species, *Rissa* (in which the hind toe is wanting), and *Xema* (the members of which have forked tails), each containing 2 species, and *Larus* (with square tails), in which are a large number of varying species. Among the most common are the black-headed G. (*L. ridibundus*), which frequents marshy coasts; the herring G. (*L. argentatus*), a large and handsome variety; the common G. (*L. canus*); the lesser black-backed G. (*L. fuscus*); the greater black-backed G. (*L. marinus*), which is one of the largest species; and the glaucous G. (*L. glaucus*), which is circumpolar in its distribution.

adopted a rifle of different pattern. In the meantime, after a series of experiments and exhaustive inquiries, the Brit. War Office adopted a new rifle in the shape of the Lee-Metford Mark I in 1888. In 1891 the Lee-Metford Mark II was adopted, this being a 6-cartridge magazine carbine with bolt action and firing smokeless powder, which had come into general use in 1890. This rifle was subsequently still further improved, and became known as the Lee-Enfield rifle. Cordite was introduced as a smokeless explosive adapted to both the Lee-Metford and Lee-Enfield types of rifle, both of which took cartridges made from cordite. Both these rifles were small-bore magazine rifles, the whole length of whose barrel was protected by a wooden handgrip. The length of the barrel was 21 in. In 1900 Great Britain had adopted a rifle of the bolt action type, but had rejected the multiple loader by means of a charger. This adopted weapon was given up in 1903 when the short rifle came into prominence. Up to 1903 the principle adopted by the musketry regulations had been to use the rifle as a single loader whenever possible and to reserve magazine fire for special emergencies. The long Lee-Metford and Lee-Enfield rifles (with bayonets 5 in. longer than before) were fitted out with a charge-loading apparatus and issued to the infantry of the territorial force.

The massed formations in attack used by the Germans in the First World War needed an automatic G. to resist them; otherwise they would have overwhelmed their opponents before suffering any appreciable number of casualties. Consequently the number of machine G.s of the Allies rapidly increased. Early in the First World War the Lewis light automatic G. was invented and used extensively, and it is still in use, being the prin. weapon of half the infantry in the Brit. Army. It is not regarded as a 'specialist' weapon, and instruction in its use is a normal part of training. The G. is air-cooled, and fed by circular pan-shaped magazines, each holding 47 rounds of .303 S.A.A. The weapon is shoulder-controlled, can produce a large vol. of highly concentrated fire, has many delicate parts, and therefore requires careful handling. Its rate of fire is between 600 and 700 rounds per min., best delivered in short bursts of 4 or 5 rounds at intervals.

As a result of the First World War experience a new Mark VI S.M.L.E. rifle was approved. This has an aperture sight, and has a much stronger body and barrel than its predecessor. Another result of experience is that opinion has grown to favour a streamline bullet, but this requires deeper loading, reducing the space allocated to the charge, and great care is required in ensuring exact concentricity as this governs the flight. See also BULLET; FIREARMS; and, for further information on sporting G.s, see RIFLE.

See W. W. Greener, *The Gun and its Development*, 1881; H. B. C. Pollard, *A*

History of Firearms, 1926; W. T. Carman, *A History of Firearms from the Earliest Times to 1914*, 1955.

Cannon.—An old name for G.s as used by the artillery and as contradistinguished from hand G.s. The name is derived from the Lat. *canna*—a hollow reed. It is difficult to establish when cannon were first used in Europe, but they were first used in Great Britain by Edward III in his campaign against the Scots in 1327. They were then called 'crakys of war.' The Fr. appear to have first used them in 1338. Originally cannon were somewhat in the nature of mortars, constructed by welding together iron bars, strengthened by iron hoops. A good specimen of early cannon is 'Mons Meg,' now at Edinburgh Castle. The earliest patterns were loaded and fired at the muzzle, but breech loading and firing was not long in developing. A form of cannon was the bombard—from the Gk *bombein*, the noise made when it was fired. These were made of hammered iron originally, but later on they were cast from a composition called G. metal. A G. of this pattern was found on the coast of Ireland, and is supposed to have been used by the Sp. Armada. Gradually the term cannon was used to describe all sorts of missile-throwing machines, small as well as large. It was the custom in those times to give these weapons personal names, such as the Devil, the Twelve Apostles (for a battery of 12). A survivor of these named G.s is Queen Elizabeth's Pocket Pistol at Dover. Many types of cannon were named after serpents. The name culverin remained until a very late date. The mounting of cannon was very crude in the early days; they were simply laid on pieces of timber to which they were fastened. For mobility wheels were fixed to the timber. Elevation was obtained by fixing to the front portion of the timber, called the carriage, an arrangement similar to that used for high-jumping, i.e. a vertical stand pierced with holes so that the cross-bar could be raised or lowered. Another method was to fix the cannon to gimbals which swivelled round in any direction from a bench. These G.s were controlled by hand and were loaded at the breech. In the 17th cent. red-hot shot was fired from cannon, the idea having occurred to a German. Improvements in the construction of cannon were noticeable in the 16th cent. in Switzerland, where the casting of a whole cannon was experimented with, the bore being 'bored out' from the solid. The Flemings were considered the masters in everything pertaining to cannon in the 14th and 15th cents., and many of the chief positions in the artillery of England were held by them. They were also the writers of all the authoritative manuals on the construction and employment of cannon. The numerous wars in Europe during the 17th and 18th cents. gave ample scope for the employment of cannon and improvements were constantly being made, until a light cannon or G., with fairly good accuracy, was evolved, which was eventually

displaced by the modern field G. See also ARTILLERY; GUNNERY; HOWITZER.

Gun-carriage, support of a very large piece of ordnance. It is built in order to be able to stand very heavy strains. It has to withstand the shock caused by firing the piece, and it has also to be of great stability in order to be able to stand the strain of being drawn at a rapid pace over broken or rocky ground. The detachable front consisting of 2 wheels, axle, and shafts, to which horses were harnessed, is called the limber. There is a special dept in the arsenal at Woolwich which attends to the manuf. of G.s.

Gun-metal, copper base alloy containing up to 10 per cent tin, up to 10 per cent zinc, and up to 5 per cent lead. It is a tough reddish metal, much used for making castings for bearings and other engineering purposes, and formerly used for making ordnance.

Gunboat. The main principle which underlies the construction of a vessel of this type is that she shall to all intents and purposes be simply a floating gun-carriage. The earliest type of G., constructed about the middle of the 19th cent., was of about 180 tons, 75 ft long, with a speed of about 6½ knots. Various improvements were made on the type of vessel, until at the present time we have specially constructed G.s. which are used to a very great extent for riv. service and which have a displacement tonnage of about 700 tons. The average speed is just over 12 knots, and they carry 2 4-in. guns, 4 12-pounders, and 10 machine guns. The hull is steel built and copper sheathed, and about 2½ times as long as the earliest type of G. Vessels of this type are used a great deal on the R. Nile. In the Second World War Brit. G.s. were used against the Axis in North Africa and by the Americans in Chinese waters.

Guncotton, nitro-cellulose or cellulose nitrate, with a high degree of nitration. It is produced by the action of nitric acid and sulphuric acid on cotton, wood, or other purified celluloses. Early in the 19th cent. the action of concentrated nitric acid on fibrous or woody bodies was noted, and finally Pelouze made the discovery that cotton when treated with concentrated nitric acid became a highly explosive body. Following on these experiments Schonbein commenced his discovery of G. proper. The modern method of manuf. is based essentially upon the method discovered by Schonbein. Cotton waste which has been cleaned in hot caustic soda solution, washed and dried, is treated with a mixture of concentrated sulphuric and nitric acids. The sulphuric acid is used in quantities in excess of the nitric and its chief use is to absorb the water produced during the process. The strength of this nitrating acid is adjusted according to the degree of nitration aimed at, depending on the use to which the product is to be put. The process takes place at the ordinary temp. and lasts for from 3 to 4 hrs. After being subjected to sev. digestions in boiling water, the first of which must be slightly acid to hydrolyse

unstable sulphate and nitrate impurities, and the last slightly alkaline to neutralise residual free acidity, the G. is pulped in a Hollander or refiner, washed (poached), and is then ready for the next stage in the manuf. of the product for which it is destined. G. has found wide and varied uses as an ingredient of propellants (cordites) and demolition charges. When dry G. is highly inflammable and is readily detonated by a blow, and is handled in this condition only under strict precautions. When wet it is safe to handle and insensitive to mechanical shock but can be detonated by a charge of dry G. and a detonator. See also EXPLOSIVES; PYROXYLIN.

Gundagai, tn of New South Wales, Australia, situated in Clarendon co., 95 m. N.E. of Albury. Pop. 2200.

Gungl, Josef (1810-89). Hungarian composer and conductor, b. Zsámbék; was a bandmaster in the Austrian Army (1835-43); in 1843 he estab. an orchestra, with which he toured in Europe and America. He became director of music to the king of Prussia in 1849, and to the emperor of Austria in 1858. He composed numerous popular dances, of which the *Amoretten* waltz was perhaps the most popular.

Gunib, fortress and vil. in Daghestan (q.v.), 50 m. SW. of Makhachkala, situated on an almost inaccessible conic mt. It was the last refuge of Shamil, the chief of the mt tribes, who surrendered here to Russia in 1859. Pop. (1926) 387.

Gunite, see CONCRETE.

Gunn, Mrs Aeneas, see AUSTRALIAN LITERATURE.

Gunn, Nell Miller (1891-), novelist, b. Dunbeath, Caithness. From 1906 to 1937 he worked in the civil service. His first novel, *Grey Coast*, 1926, at once brought him recognition, and was followed by *Morning Tide*, 1931, *The Lost Glen*, 1932, *Sun Circle*, 1933, *Butcher's Broom*, 1934, *Highland River*, which was awarded the Tait Black Memorial prize for 1937, *Wild Geese Overhead*, 1939, *Second Sight*, 1940, *The Drinking Well*, 1947, *The Well at the World's End*, 1951, and *Bloodhunt*, 1952. *Hidden Doors*, 1929, is a collection of short stories, while *Off in a Boat*, 1938, and *Highland Pack*, 1950, are travel books. G. excelled in depicting the ordinary life of the Scottish Highlands, and as an interpreter of the psychology of the Celt.

Gunnarsson, Gunnar (1889-), Icelandic novelist who formerly wrote in Dan., but of late years writes in his mother tongue.

Gunnedah, tn on Naomi R. in New South Wales, Australia, 295 m. NNW. of Sydney. It is an important centre in the fertile dist. of Liverpool Plains (q.v.), an agric. and grazing area. Pop. 5260.

Gunnery, science of the technical employment of ordnance and firearms. The science is a very detailed one, since a knowledge of it requires a knowledge of the metals from which the guns are made, the method of their manuf., and an ability to calculate the strain to which its use

will subject the weapon. Again the science must calculate the probable effect of the missile upon the object fired at, the velocity of the projectile when fired, and the effect of the forces which will be brought to bear upon the missile both before and after it leaves the gun. The subject has been frequently treated in books, the earliest being pub. fairly early in the 16th cent. The science is to-day far more exact than it has ever been. Calculating tables and instruments have been produced from which it is possible nowadays to calculate, before a shot is fired, the exact range of a gun, where elevations and calibre are known. The intricate calculations and the delicate mechanism, both of the modern gun and of the modern instruments, are such that G. may now be regarded as an exact science. On the various operations involved in spotting and attacking hostile aircraft, see ANTI-AIRCRAFT DEFENCE. See also ARTILLERY. See *The Official Textbook of Gunnery; Ordnance and Gunnery*; Lt.-Col. E. MacFarland, *Textbook of Ordnance and Gunnery*, 1929. See also FIREARMS; GUN; NAVAL GUNNERY.

Gunning, Elizabeth, Duchess of Hamilton and of Argyll (1734-90), Irish beauty, daughter of John G. of Castle Coote, Co. Roscommon, Ireland. In 1751 she and her sister Maria (q.v.) went to London and attracted great attention as 'the handsomest women alive.' In 1752 Elizabeth married James, 6th duke of Hamilton, who d. in 1758; and in the following year she married John Campbell, marquis of Lorne, who was afterwards 5th duke of Argyll. She and her sister were frequently painted, and numerous engravings of the portraits exist.

Gunning, Maria, Countess of Coventry (1733-60), Irish beauty, said to have been even more handsome than her sister Elizabeth (q.v.). She was once mobbed by an admiring crowd in Hyde Park, and the king accordingly gave her a guard. In 1752 she married George William, 6th earl of Coventry.

Gunnison, riv. of W. central Colorado, U.S.A. It is formed by the confluence of the Slate and Taylor rivs. above G., and its course is W. and NW. until it enters the Grand R. at Grand Junction, about 25 m. E. of the W. borders of Colorado. There are numerous canyons. G. Tunnel diverts water from G. R. into Uncompahgre Valley.

Gunnlaugsson, Björn (1788-1876), Icelandic mathematician and writer. In his youth he was privately taught by 2 country parsons. After 9 years as a farm-labourer and fisherman he left Iceland in 1817 for the univ. of Copenhagen, where he won the univ. gold medal for a mathematical treatise that year and again in 1820, soon afterwards returning to Iceland. He was utterly selfless, a man of childlike simplicity and gigantic stature. His great physical endurance stood him in great stead when, during 1831-43, he surveyed the whole of Iceland with the most elementary

outfit and financed solely by the almost penniless Icelandic Literary Society. He travelled throughout the entire uninhabited interior, a heroic enterprise previously unattempted. His map of Iceland, in view of the circumstances, is incredibly full and accurate, and was pub. by the Society, 1844-9. His pub. writings are in Dan., Icelandic, and Lat. By his long religio-philosophic poem, *Njóla* (Night), 1st ed. 1842, a venerated classic, he exercised a profound influence upon Icelandic thought.

Gunpowder, explosive composed of potassium nitrate, charcoal, and sulphur, in varying proportions, often 75:15:10. G. has had an enormous influence on the hist. of the world; it revolutionised the art of war, and has not been without its effect on the arts of peace. The names of Friar Roger Bacon (q.v.) and the Ger. Schwartz (q.v.) have usually been associated with its discovery. Many references to the existence and use of cannon and G. are found between the years 1327 and 1340. Edward III is known to have used cannon against the Scots in the early wars of his reign, whilst we find another reference to the existence of G. in England in 1338. In Richard II's reign it was in fairly common use, and Henry V ordered that G. should not be taken out of the country without licence. The latter used it before Harfleur, but it did not become really effective until the end of the 15th cent. It has been superseded for most purposes by more powerful or safer explosives. See EXPLOSIVES; FIREWORKS.

Gunpowder Plot, conspiracy to blow up the Houses of Parliament and the king (James I), who was to be present to open Parliament on 5 Nov. 1605. It was contrived by a number of fanatical Rom. Catholics, with Robert Catesby (q.v.) at their head, and seems to have been brought to a head by the revival, in 1604 and 1605, of measures of repression against the Catholic faith in England. It is known that Catesby was conceiving a plan in May 1603, and in Jan. 1604 some details were arranged between himself, Robert Winter, and John Wright. They were later joined by Guy Fawkes (q.v.), Thomas Percy, Thomas Winter, John Grant, Ambrose Rokewood, Robert Keyes, Sir Everard Digby, Francis Tresham, and Thomas Bates, a servant of Catesby's, while 2 Jesuit priests, Greenway and Garnet, apparently knew of the plot's existence, though they were probably not actually involved in it. In May 1604 the conspirators hired a house adjoining the House of Lords, and in Dec. began to work a mine from the cellar. In Mar. 1605 they obtained possession of a vault under the House of Lords, and stored in it 36 barrels of gunpowder. In May they separated to make arrangements for the carrying out of the plot subsequent to the explosion. The plot was discovered through an anonymous letter sent to Lord Monteagle, a Catholic peer. On 4 Nov. a thorough search was made, and Guy Fawkes was arrested at his post in the cellar and tortured to reveal the names of

his fellow-conspirators, who were subsequently executed. The discovery of the G. P. deepened national hatred against the Catholics in general, and increased the severity of the penal code against them. The ceremony of searching the vaults of Parliament at its ann. opening is a legacy of the G. P. The plot made a deep impression on the country, and from then 5 Nov. has been commemorated as 'Guy Fawkes' Day' by the lighting of bonfires, in which 'guys' are burned, and by firework displays. For the theory that the G. P. was largely a fiction, inspired by Cecil as a means of inflicting severer penalties on the Catholics, see J. Gerard, *What Was the Gunpowder Plot?* 1897.

matical treatises, and also treatises on the *Sector*, *Cross-staff*, *Bow*, *Quadrant*, and other instruments; and in 1620 *Canon triangulorum*.

Gunter's Chain, see CHAIN.

Günther, see BRUNHILDA.

Gunther, Albert Karl Lewis Gotthilf (1830-1914), Ger. zoologist. He pub. 10 vols. of catalogue of the reptiles and fishes in the Brit. Museum, 1858-70. *Fische der Südsee*, 1873-1910, and *Reptiles and Batrachians of Central America*, 1885-1902, are 2 of his many original contributions to zoology.

Günther, Johann Christian (1695-1723), Ger. poet, belongs to the Silesian school of poetry, of which indeed he is the last



THE GUNPOWDER CONSPIRATORS: FROM AN OLD PRINT

S. R. Gardiner's *What The Gunpowder Plot Was*, 1897, refutes this view. See also D. Carswell (editor), *Trial of Guy Fawkes and Others*, 1934, and H. R. Williamson, *Gunpowder Plot* (a novel), 1949.

Güns, see KÖSZEG.

Gunst, Pieter van (1667-1724), Dutch portrait engraver, b. Amsterdam. His work is neat and careful, but sometimes weak in drawing. Among his best engravings are those of A. Houbraken's drawings from Van Dyck; of Brandon's 'William III and Queen Mary'; of Holbein's 'Erasmus'; of van der Werf's 'Duke of Marlborough'; of Kneller's 'Queen Anne'; of Riley's 'Dryden'; and of Greenhill's 'Locke.'

Gunter, or Gunther, Edmund (1581-1626), mathematician, b. in Herts; educ. at Westminster and Oxford. In 1619 he became prof. of astronomy at Gresham College, London. He was the inventor of G.'s chain, used in land surveying, which is 22 yds long and divided into 100 links; G.'s line, a logarithmic line laid down upon scales, etc.; G.'s quadrant, used for finding times, altitudes, azimuths, etc.; and G.'s scale, employed in navigation and trigonometry. He pub. sev. mathe-

representative of talent. His poem on the peace of Passarowitz and his lyrics, which reveal a deep emotionalism and a fine imaginative range, won Goethe's praise. Unfortunately he wasted his talents in a life of dissipation. See W. Krämer, *Das Leben des schlesischen Dichters J. C. Günther*, 1950.

Gunther, John (1901-), Amer. journalist, b. Chicago. Educ. at the Univ. of Chicago, from 1924 to 1934 he worked in Europe for the *Chicago Daily News*. His *Inside Europe*, 1936, a popular account of European politics, sold about half a million copies. He followed it with *Inside Asia*, 1939, *Inside Latin America*, 1941, *Inside U.S.A.*, 1947, *Inside Africa*, 1955, and *Inside Russia Today*, 1958. Others of his books are *Death Be Not Proud*, 1949, and *Eisenhower*, 1952.

Gurgan, see GORGAN.

Gürkhas, see GHURKHAS.

Gurnard, fish belonging to the family of mailed-cheeks (*Trigla*). G.s are bottom-fish and are best caught therefore with a trawling net; they keep near the coast and are represented by as many as 40 species in temperate and tropical seas. Along Brit. shores are the grey and red G. (*Trigla gurnardus* and *T. cuculus*). The

head of a G. is angular and bony, but the 2 most characteristic features are 3 detached finger-like rays, projecting beneath its mouth, which are at the same time organs of motion and of touch, and the pectorals which, when expanded, make a young fish look like a butterfly.

Gurney, Edmund (1847-88), psychologist, b. Hershham, Surrey. At Cambridge he obtained a good classics degree in 1871. From early youth he had a passion for music and after graduation joined a musical society in Harrow but did not satisfy his own standards as a performer. He also studied philosophy and psychology, and pub. an erudite discussion on the philosophy of music, *The Power of Sound*, 1888. Meanwhile he took up the study of medicine in 1877 but abandoned it for the law in 1881. Again he lost interest, in favour of spiritualism. He was a founder of the Society for Psychical Research. With F. W. H. Myers and F. Podmore he collected a mass of data on thought-transference, etc., and pub. it as *Phantasms of the Living*, 1886. He made an elaborate survey of hallucinations; his work on hypnotism is among the best available. Most of these writings were pub. in the Proceedings of the Society for Psychical Research, in which (vol. 5, p. 359) is a summary of his work in experimental psychology by F. W. H. Myers.

Gurney, Sir Goldsworthy (1793-1875), inventor, b. Padstow, began life by practising as a surgeon, and disappointed his patients when, shortly after 1823, he gave up the practice of medicine altogether. Faraday acknowledged his indebtedness to G.'s course of scientific lectures, which was pub. in 1823. G.'s first invention was the oxy-hydrogen blow-pipe; later he discovered the splendid light obtained by the fusion of magnesia and lime (the 'Drummond light'), and soon afterwards the high-pressure steam jet, which was to revolutionise locomotion and was also invaluable in the purification of sewer gas.

Gurney, Ivor (1890-1937), composer and poet, b. Gloucester, where he was trained in music as a cathedral chorister before he went to London to study at the Royal College of Music. He was shell-shocked in the First World War and, suffering from poverty and neglect afterwards, lost his reason in 1922, dying in the mental hospital at Dartford. His poetry was highly thought of by literary critics and his songs (42 with piano and 15 Houseman settings with string quartet and piano), which form almost the whole of his output, are among the best of the Eng. school of his time.

Gurney, Joseph John (1788-1847), philanthropist, b. Norfolk, banker and minister in the Society of Friends. In social work he supported the unselfish efforts of Zachary Macaulay and Wilberforce. The 2 causes into which he threw his best endeavours were the abolition of slavery and the improvement of prisons. In the latter he worked side by side with his sister, Elizabeth Fry. In *Prison Discipline*, 1818, he unfolds his schemes of

reform, whilst a Quaker's opinion of his own sect is revealed in his *Religious Peculiarities of the Society of Friends*, 1824.

Gurney, Oliver Robert (1911-), Assyriologist, and Shillito reader in that subject at Oxford Univ. since 1945, b. London, nephew of Prof. John Garstang (q.v.). Is an authority on the Hittites, and has excavated sites in S. Turkey with Prof. Garstang. Contributor to the *Annals of Archaeology and Anthropology*, Liverpool, and author of a very successful summary study, *The Hittites*, 1952.

Gur'yev: 1. Oblast (prov.) of the Kazakh S.S.R. of the Soviet Union. It contains the important Emba oilfields as well as possessing fisheries. Pop. 240,000.

2. Tn on the r. b. of the Ural, 11 m. from the Caspian Sea in the region of Ural'sk, R.S.F.S.R. It is the terminus of the pipeline from the Emba oilfields. Pop. 80,000.

Gustav Line, see ITALIAN FRONT, SECOND WORLD WAR.

Gustavus I (Vasa) (1496-1560), king of Sweden, b. Lindholm, the son of Erik Johansson of Rydboholm, a Swedish nobleman. In 1514 he was sent to the court of his cousin, Sten Sture (q.v.), and bore the Swedish standard in the battle of Bränkyrka (1518), when Sture defeated Christian II of Denmark. During the subsequent negotiations he was one of the Swedish hostages, and was treacherously carried off by the Danes and imprisoned at Kalb. He escaped and returned to Sweden in 1520. In the same year, roused with the rest of the Swedish nation by the news of the Stockholm massacre, he organised the revolt of the yeomen of Dalecarlia. The Danes were driven out and G. was proclaimed king by the Parliament of Stenungas and crowned in 1523. The task which faced him in establishing the independence of Sweden was full of difficulties, as the country was very poor and there was a complete lack of capable statesmen. He made a peace treaty with the Danes at Malmö in 1524. His projects for the strengthening of the national monarchy were in constant danger from the Swedish peasantry, and between 1525 and 1542 he put down 4 rebellions. For political reasons he severed Sweden's connection with Rome and introduced the Reformation at the Parliament of Westeras in 1527. The Swedish crown was made hereditary in the Vasa family in 1544.

Gustavus II (Adolphus) (1594-1632), king of Sweden, was b. Stockholm, the son of Charles IX. He was carefully educ. in languages, politics, military science, and Protestant principles, and succeeded to the throne in 1611. In 1613 he terminated the war with Denmark by the peace of Knäröd and in 1617 the peace of Stolhova closed the Russian war and gave Karelia and Ingria to Sweden. In 1621 he resumed the war with Poland, of which the chief events were the capture of Riga and Mitau in 1621; the capture of Kokenhusen and the invasion of Lithuania in 1625; the battle of Walhof, completing G.'s conquest of Livonia; the occupation

of Pillau, the conquest of Ermeland, the surrender of Elbing and Marienburg, and the blockade of Danzig in 1626; the disastrous campaign of 1627, and the defeat of G. by Koniecpolski at Stuhm in 1629. The war ended with the truce of Altmark. By this time G. had acquired a European reputation as a brilliant military leader, and Swedish troops were considered the best in Europe. G. then joined in the Thirty Years War, partly from a sincere desire to help the Ger. Protestants, but still more from a fear that the emperor might acquire the Baltic ports and so menace Sweden. The Swedish fleet set out in 1630 and the army disembarked at



GUSTAVUS ADOLPHUS

Engraving after a picture by Van Dyck

Peenemunde in June. A successful campaign in Pomerania followed, and later in the year Magdeburg declared in favour of G. This city was invested by the imperialists and early in 1631 G. advanced to relieve it. But the suspicions and timidity of the electors of Brandenburg and Saxony frustrated his designs, and Magdeburg fell in May. In Sept. the elector of Saxony definitely threw in his lot with G., and the allies defeated Tilly at Breitenfeld, near Leipzig. G. then marched towards the Rhine, took Marienburg and Frankfurt and wintered in Mainz (1631-2), and then resumed the pursuit of Tilly. In April he forced the passage of the Danube and the Lech, and finally defeated Tilly at Ingolstadt. In July Wallenstein united with Maximilian of Bavaria, and G., attempting to reach Saxony, was confronted with the allied army and defeated at Nuremberg in Sept. Wallenstein then retired southwards, but was overtaken by G. at Lützen. A terrible battle was fought on 6 Nov., during which G. was killed, while Wallenstein was forced to retire upon Leipzig.

G. was a capable and popular ruler. Under him the gov. was reorganised on a departmental basis, and national prosperity increased by the building of tns and the promotion of commerce. On the other hand, his constant wars inevitably resulted in crushing taxation which had economic repercussions long after his death. G. married Marie Eleonora, sister of the elector of Brandenburg, in 1620, and had one daughter, Christina, who succeeded him. See C. R. L. Fletcher, *Gustavus Adolphus*, 1890, and Sir G. MacMunn, *Gustavus Adolphus: the Northern Hurricane*, 1930.

Gustavus III (1746-92), king of Sweden, b. Stockholm, the son of King Adolphus Frederick. On his accession (1771) he attempted to mediate between the opposing 'Hat' and 'Cap' factions, and succeeded in breaking the power of the oligarchical 'Caps' by a *coup d'état* (1772). His reign was largely occupied in organising many useful reforms, including a reorganisation of the army and navy, financial reforms, and the promotion of limited free trade. But his devotion to everything Fr. helped to make him unpopular; and his extravagance led to oppressive taxation. In 1786 the mutinous spirit of his Diet caused him to adopt a policy of rigid absolutism, which he maintained throughout the unpopular war with Denmark and Russia (1788-90). He was eventually assassinated.

Gustavus IV (1778-1837), king of Sweden, b. Stockholm, the son of Gustavus III. He ascended the throne in 1792. His character was marked by an abnormal seriousness and piety, and his foreign policy, obviously unrealistic in the circumstances, shows signs of his mental instability. In 1800 he joined the armed neutrality of the N. powers; in 1803 joined the Bourbon cause, and later allied himself with the coalition against Napoleon. In 1807 he refused the terms offered him by Napoleon, and thus lost Rügen and Stralsund, while Napoleon persuaded Russia to invade and annex Finland. By the end of 1808 it was obvious that G. was insane, and in May 1809 he was deposed. He d. in Switzerland in 1837.

Gustav(us) V (1858-1950), king of Sweden, b. Drottningholm, the son of Oscar II of Sweden and Norway, and Sophia Wilhelmina; he entered the army and travelled considerably. In 1881 he married Victoria, daughter of the duke of Baden. He succeeded to the throne of Sweden in 1907, the union between Norway and Sweden having been dissolved in 1905. In both World Wars G.'s personal sympathies are said to have been pro-German, but Sweden in each case preserved a strict neutrality. The 43 years of his reign saw considerable social reforms in Sweden.

Gustav(us) VI, Adolph(us) (1882-), king of Sweden, son of Gustavus V, whom he succeeded in 1950. He married (1) Princess Margaret Victoria in 1905 (d. 1920) and (2) Lady Louise Mountbatten in 1923. His eldest son was killed in an aeroplane accident in 1947, and the

heir-presumptive to the Swedish throne is his grandson, Prince Charles Gustavus (b. 1946). In 1954 G. and his wife paid a state visit to London.

Güstrow, Ger. city in the dist. of Schwerin, 34 m. ENE. of Schwerin (q.v.), on the Nebel. It was the cap., 1520-1695, of the duchy of Mecklenburg-G. There is a palace, and a 13th-cent. church. Metal goods are manuf. Pop. 30,000.

Gut, technically used in zoology as equivalent to the alimentary canal. Three parts have to be distinguished: (a) the fore-G. or stomodaeum lined by the outer layer or ectoderm; (b) the mid-G. or mesenteron lined by the inner layer or endoderm; (c) the hind-G. or proctodaeum lined by the ectoderm. These 3 typical parts, thus distinguished according to their location, vary greatly in size and function in different classes, but the mid-G. is the most important on account of its digestive function, and because of its outgrowths (liver, etc.) in higher animals. In vertebrate anatomy the pharynx, gullet, and stomach are sometimes called fore-G.; the small intestine, mid-G.; the large intestine, hind-G. In a human adult the small intestine is from 22 to 25 ft long, and the large intestine, which is wider but about 5 ft long only, is connected to the small intestine at the ileo-caecal valve.

Gut of Canso, see CANSO.

Gutenberg, Johann Gensfleisch, or **Henne** (c. 1397-1468), Ger. printer, b. Mainz. He is said to have been the inventor of the art of employing movable types in printing, a claim which is also shared by Laurens Janszoon Coster (q.v.) of Haarlem. About 1428 he settled in Strasburg, where he stimulated the art of block-printing by the invention of a press for the multiplying of impressions. At the end of 1444 he returned to Mainz and was occupied until 1450 in trying to perfect his art. In that year he entered into partnership with a rich burgher named Faust or Fust, who lent him the money to set up a printing press. This partnership, however, was dissolved in 1455, when Faust brought an action against G. to recover his money, and in consequence of the verdict Faust secured the press. G., however, continued his work, but was not very successful commercially. The works associated with his name are the *42-line Bible*, 1452-5, the *36-line Bible*, 1457-9, and the *Catholicon*, 1460. Vol. I of the *42-line Bible* was sold in 1947 for £22,000, and a complete 2-vol. copy fetched £37,850 in 1926, while in 1954 another copy was sold for £71,400. A single leaf sold in 1955 for £130. The earliest piece of G.'s work extant is generally held by bibliographers to be a fragment, *Weltgericht* (*Last Judgment*), which by them is dated 1445. Recently (1954) this assumption was challenged by Dr O. W. Fuhrmann of Columbia Univ., New York, who argued that the *Last Judgment* is not G.'s work and that some fragments of a Donatus, which he dates c. 1450, are the earliest specimens so far

discovered. See D. C. McMurtrie, *Gutenberg Documents*, 1941.

Güttersloh, Ger. tn in the Land of North Rhine-Westphalia (q.v.), 83 m. NE. by E. of Düsseldorf (q.v.). It has important textile and foodstuff industries. Pop. 50,000.

Guthrie, Sir James (1859-1930), painter, b. Greenock, and one of the 'Glasgow' school. He first studied under John Pettie in London, and afterwards in Paris. His first pictures include, 'The Gipsy Fires are Burning, for Daylight is Past and Gone' and 'The Funeral Service in the Highlands,' but later in Glasgow and Edinburgh he specialised in portraits; some of his best being of Mr Galloway, Major Hotchkiss, and Prof. Jack. He was president of the Royal Scottish Academy, 1902-19, and knighted, 1903.

Guthrie, Thomas (1803-73), preacher and philanthropist, b. Brechin, Angus. From 1815 to 1825 he was at the univ. of Edinburgh, but in 1826 went to study in Paris. In 1837 he became one of the ministers of Old Greyfriars Church, Edinburgh, and in 1840 was appointed to St John's par. there. He was one of the first in Scotland to advocate compulsory education, and his name is associated with the cause of Scottish ragged schools, his *Plea for Ragged Schools* being pub. in 1847. He was moderator of the Free Church General Assembly in 1862.

Guthrie, Thomas Anstey, see ANSTEF, F. **Guthrie**, tn of Oklahoma, U.S.A., and the co. seat of Logan co. It was founded in 1889, and in 1890 was made the cap. of the ter., being the state cap. from 1907 to 1910, after Oklahoma was made a state. It has considerable trade with the surrounding country, and manufs. cotton-seed oil, cotton goods, flour, cereals, cigars, lumber, brooms, and furniture. It is the seat of Benedictine Heights College. Pop. 10,113.

Guthrum (d. 890), one of the leaders of the Dan. host which encamped near Reading in 871, and fought against Ethelred and Alfred. He was defeated by Alfred at Edington in 878, and a treaty was made at Wedmore whereby the country was divided between the Danes and Alfred, that N. and E. of a line running roughly from Chester to London constituting the Danelaw (q.v.). G. occupied East Anglia, and was baptised at Aller, Alfred standing godfather to him.

Guthry, Henry (c. 1600-76), bishop of Dunkeld, b. Coupar-Angus. In 1632 he was presented by Charles I to the par. church of Stirling, but opposed him in 1636 when the king was about to introduce a liturgy. In 1665 he was translated to the bishopric of Dunkeld. He was the author of *Memoirs of Scottish Affairs from the Year 1637 to the Death of Charles I*, pub. 1702, a book which is of value as a contemporary account.

Guts-Muths, Johann Christoph Friedrich (1759-1839), Ger. teacher, b. Quedlinburg. He was educ. at Halle Univ., and in 1785 became a teacher of geography and gymnastics at Schnepfenthal. He introduced a new method of teaching geography, and

It was largely owing to him that gymnastics became so popular in the schools of Germany. His handbooks explain his methods—*Gymnastik für die Jugend*, 1793, and *Handbuch der Geographie*, 1810.

Gutta-percha, name applied to the dried milky juice of trees found mainly in the is. of the Malay Archipelago. These trees belong to the family Sapotaceae, and often reach a height of 100 ft and have trunks varying from 2 to 3 ft in diameter. The name G. is Malay *getah*, meaning gum, and *percha*, being the name of the tree. The substance, which is similar to india-rubber, was formerly obtained by cutting down the tree and then stripping off the bark, but now the less destructive method of tapping the trees is employed. The milky juice soon coagulates on exposure to the air and is then kneaded under a supply of running water and rolled into sheets to expel the air and to enable it to dry quickly. It is afterwards put into a masticator, which is heated, and revolved until it is fit for use. There are various kinds of G., but that from Singapore is considered the best. The substance has long been known to Europeans, having been imported in the form of native shoes, etc., but it was not until 1843 that they realised its value, or knew of its nature and usefulness. Dr Wm Montgomerie, of the Indian Medical Service, first noticed that the Malays used it for making handles to their knives, etc., and conceived the idea of employing it for medical instruments. After this it was imported to a great extent, and used for coating marine electric telegraph wires (although it has now been superseded by india-rubber), for making golf-balls, overshoes, beltings for machinery, tubing, etc., as well as for stopping teeth. It is also used by surgeons for splints, but it is chiefly employed now for electrical purposes because of its inability to conduct electricity. When imported G. appears in hard cakes of a reddish-brown colour, and when cut has a peculiar cheese-like smell. It becomes soft when put into hot water, and can be drawn out into threads, but hardens on cooling and is not brittle. It is not affected by alkaline solutions or by dilute acids, but rapidly deteriorates when exposed to air and light. It differs from india-rubber in being non-elastic.

Guttormsson, Guttormur J. (1878–), Canadian poet of Icelandic parentage, writing exclusively in Icelandic. He has a versatile mind, and writes both humorous and serious verse. His epic cycle, *Jón Austfirðingur* (John of the Eastern Fjords), describing the hardships of the destitute immigrant in undeveloped Canada about 1870, is a work of great pathos and stands in the front rank of Icelandic epic poetry. The leading characters of the poem are the author's own parents. See W. Kirkconnell, 'A Skald in Canada,' in *Transactions of the Royal Society of Canada*, xxxiii, 1939.

Gutzkow, Karl Ferdinand (1811–78), Ger. dramatist, b. Berlin. He studied theology at the univ. of Berlin, but the pub. of his *Forum der Journalliteratur*, in

1831, began his literary career. The same year he joined Menzel in Stuttgart, and worked on the *Litteraturblatt*, and in 1832 pub. *Maha-Guru*, a satirical romance. In 1833 his *Wally, die Zweiflerin* appeared, for the pub. of which he was imprisoned, having shown himself in this book to be an advocate of the 'Young Germany' movement. On his release he went to Frankfurt and Hamburg, where he wrote his tragedy *Richard Savage*, 1839. Other plays of his are *Zopf und Schwert*, 1844, *Das Urbild des Tartüffe*, 1847, *Der Königsleutnant*, 1849, all 3 of which are comedies, and *Uriel Acosta*, a blank-verse tragedy. In 1847 he became director of the Court Theatre, Dresden. He was also a writer of novels: *Seraphine* appeared in 1838 and *Blasewitz und seine Söhne*, a satire on the education of the day. G.'s works contain some very fine character drawing and are of interest for the glimpses they afford of the conflicts and intellectual problems of his time, but they are marred by the fact that he could not subordinate his political opinions to art. See studies by K. Freiburg-Rüter, 1930, and M. Schönfeld, 1933.

Guy, Thomas (1644–1724), founder of Guy's Hospital, b. Southwark. He was educ. at Tamworth, and in 1660 was apprenticed to a bookseller, but in 1668 set up in business for himself. By his trade, chiefly in Bibles, and his investments, especially in the South Sea Company, he amassed a large fortune, and in 1695 became member of Parliament for Tamworth, where he had founded an almshouse in 1678 for 6 poor women. He also built a tn hall for Tamworth in 1701, which is still standing. In 1709 he contributed largely for the poor refugees from the Palatinate, and in 1712 subscribed to the fund for Bowyer, the printer, after his great loss by fire. In 1704 he became governor of St Thomas's Hospital, and in 1707 built 3 new wards at a cost of £1000 and contributed yearly towards their support. In 1722 he began the erection of Guy's Hospital (q.v.), on which he spent £18,793, and when he d. left for its endowment £200,000. He endowed Christ's Hospital with £400 a year. See BOOKSELLING.

Guy de Chauliac (c. 1298–1368), Fr. surgeon, b. Chauliac, Auvergne, and educ. at Montpellier and Bologna. He took holy orders and became a canon at Lyons, where he also practised surgery. He was appointed physician to Pope Clement VI and to his 2 successors at Avignon. In 1363 he completed his *Chirurgia Magna*, first printed in Fr. in 1478. G. was the most eminent surgeon of his time; his authority remained for over 2 centuries. In his book he distinguished the various kinds of hernia from varicocele, hydrocele, and sarcocele, described the treatment of wounds and fractures and an operation for radical cure of hernia, and gave an excellent account of contemporary dentistry. He also gave a vivid and accurate account of the Black Death, which visited Avignon in 1348 and 1360; during the epidemics he continued

manfully to tend the sick while many other physicians fled from the locality. See F. Nicolson, *La Grande Chirurgie de G. de Chauliac*, 1890.

Guy of Warwick, hero of a M.E. romance, versions of which existed in Fr. in the 13th cent. The story is an account of G.'s foreign wars and of his marriage to Félice, daughter and heiress of the earl of Warwick. His pilgrimage to the Holy Land is also related, and his defeat of the giant Colbrand, by whose death Winchester was delivered from the invading N. kings.

Guyenne, or Guienne, largest of the anct. provs. of France, corresponding to the present depts of Gironde, Dordogne, Lot, Lot-et-Garonne, and Aveyron, and parts of Landes and Tarn-et-Garonne. In the 12th cent. it formed with Gascony (q.v.) the duchy of Aquitaine (q.v.).

Guyon, *Mme* Jeanne-Marie Bouvier de la Motte (1648-1717), Fr. mystic, b. Montargis. She came under the influence of Father Lacombe, a quietist. She preached her doctrine of quietism at Turin, Grenoble, Nice, Genoa, Vercelli, and Paris, where she settled in 1686, but was arrested in 1688 for having taught heretical opinions and for having corresponded with Molinos, the leader of quietism in Spain. After her release she became acquainted with Fénelon, who defended her in a controversy with Bossuet. She was again imprisoned in 1695 and not released till 1702. *Mme G.'s* works, in 40 vols., including the *Autobiography*, were pub. in 1767-91.

Guy's Hospital, founded 1721 by Thomas Guy (q.v.), who was buried in the church of St Thomas whence his remains were removed to the newly-built hospital chapel in 1774. The school of medicine and surgery was estab. 1769; in 1816 John Keats was in the medical school. Under the National Health Service Act, G. H., together with York Clinic, Nuffield House (private patients' section), Evelina Hospital for Sick Children, and the Eleanor Wemyss Home, became a teaching hospital. There are 815 beds.

Guyton de Morveau, Louis Bernard, Baron (1737-1816), Fr. chemist, b. Dijon. He studied law in the univ. at Dijon and became a member of the Legislative Assembly in 1791, and was a member of the National Assembly in 1792 and 1795. From 1800 to 1814 he was master of the mint, and was made a baron in 1811. He contributed largely to the scientific periodicals of the day, and also pub. *Méthode d'une nomenclature chimique* and *Traité des moyens de désinfecter l'air*, which describes the disinfecting powers of chlorine and of hydrochloric acid gas.

Guzman, Fernán Pérez de, see PÉREZ.

Guzzeh, see GAZA.

Gwalior, formerly one of the Indian princely states, now forms part of Madhya Bharat, a state formed from the union of G. and a number of Malwa states. The Maharajah of G. is the Rajpramukh. G. is famous for its fine old fort and for some colossal rock sculptures. It has been the scene of much fighting over the centuries,

and it was here in 1858, in the fighting following the Indian Mutiny, that the Rani of Jhansi was killed. The new city, which is finely laid out, is known as Lashkar.

Gwelo, central tn of Southern Rhodesia. It is situated midway between Salisbury and Bulawayo, being 113 m. N.E. of the latter tn by rail. Near G. the railway branches off to Lourenço Marques. It is the cap. of the midlands, was founded in 1894, and is a thriving centre of supply of an important mineralised dist. producing gold, chrome ore, silver, and asbestos fibre; and it is also an important rail centre. The chief farming crop is maize and the tn is an important cattle centre. There are Anglican, Catholic, Dutch, and Presbyterian churches. G. has a public park, an aerodrome, race-course, and golf links. It has a good water supply and electric light. There are gov. high schools for both sexes. The Selukwe, Que Que, and other goldfields lie at a distance of 12-30 m. from the tn and the dist. is full of anct. mine workings. In 1934 anct. ruins of the Zimbabwe type were discovered near Daisyfield (40 m. from G.). Pop. European, 5300; Africans, 15,000.

Gwersyllt, par. and tn of Denbigh, Wales, 2½ m. NNW. of Wrexham, situated in a colliery dist. Pop. 6200.

Gwyn, Nell, or Eleanor (1650-87), Eng. actress and mistress of Charles II. Of her early hist. very little is known, but when quite young she sold oranges at the Theatre Royal, Drury Lane. She afterwards became an actress, and made her first appearance in 1665 as Cydaria in Dryden's *Indian Emperor*, later playing many other witty parts, being a general favourite with the public. She became Charles's mistress about 1669, and was generally popular, her vivacity, generosity, and outspoken Protestantism (she was known as 'the Protestant whore') making her a favourite with the London mob. Her 2 sons by Charles were Charles, made duke of St Albans, and James Beaulieu, who d. young. See lives by A. I. Dasent, 1924, and C. Bax, 1932.

Gwynedd, realm of the early princes of Wales. It was the strongest of the sev. petty states into which Wales was formerly divided. It comprised the modern cos. of Caernarvon, Anglesey, and Merioneth, together with a part of Denbigh.

Gwyniad, see COREGONUS POLLAN.

Gwynn, Denis Rolleston (1893-), Irish historian, educ. at Clongowes Wood College, London Univ., and the National Univ. of Ireland. He served in the First World War and is now Research prof. of Modern Irish Hist. at Univ. College, Cork. G. has pub. many works on Irish and Catholic historical subjects, including *Lives of O'Connell*, *Casement*, and *De Valera*, and of Cardinal Wiseman and Bishop Challoner. Pubs. dealing with recent Irish hist. include *The History of Partition*, 1950.

Gwynn, Stephen Lucius (1884-1950), poet and critic, b. Dublin. Educ. at St

Columba's College, Rathfarnham, and Brasenose College, Oxford, he was for 10 years a teacher of classics, then became a freelance writer in London. From 1906 to 1918 he was M.P. for Galway City. During the First World War he served with the Connaught Rangers and received the Légion d'Honneur. He received doctorates of the National Univ. of Ireland and of Dublin Univ. Among his critical works are *The Masters of English Literature*, 1904, and lives or studies of Tennyson, 1899, Thomas Moore, 1904, Sir Walter Scott, 1930, Horace Walpole, 1932, Mary Kingsley, 1932, Swift, 1933, Goldsmith, 1935, and Robert Louis Stevenson, 1935. His *Collected Poems* appeared in 1923, and the autobiographical *Experiences of a Literary Man* in 1926.

Gwyr, see GOWER.

Gyangtse, fort tn of S. Tibet, situated on the trade route between Lhasa and Darjeeling. A Brit. expedition entered this tn in 1904. A motor way links the tn with Lhasa to the NE. and Shigatse to the W. Pop. 6000.

Gyaros (Yiaros), Ghiura, or Giura, one of the Cyclades (q.v.), about 10 m. NW. of Syros, in the Aegean. The inhab. are chiefly occupied in fishing.

Gyges, king of Lydia (685-657 bc), was the founder of the Mermaid dynasty, having put to death Candaules, his predecessor and last of the Herachid dynasty. During his kingship he captured Smyrna, Colophon, and other cities and was successful against the Cimmerians. After helping the Egyptians against the Assyrians he was again attacked by the Cimmerians, who took Sardis and put him to death.

Gylippus, Spartan general. In 415 his gov. dispatched him to command at Syracuse against the Athenian expedition, which he eventually destroyed. In 404 he was entrusted by Lysander with the Athenian treasure, some of which he appropriated. The theft was discovered, and G. went into exile.

Gyllemborg-Ehrensward, Thomasine Christine, née Buntzen (1773-1856), Dan. novelist, b. Copenhagen. When quite young she married the writer Peter Heiberg. She was afterwards divorced and then married Baron Ehrensward. Her first novel, *Familien Polonius*, appeared in 1827 in the jour. known as the *Flyvende Post*. Among her other works are *En Hversdags historie*, 1828, and *To Tidsalbre*, 1845. See J. L. Heiberg, *Peter Andreas Heiberg og Thomasine Gyllemborg*, 1882; E. Hude, *T. Gyllemborg og Hverdagshistorierne*, 1951.

Gymnastics, term signifying physical exercises practised for recreation or for promoting health. The gymnasium of the Greeks was originally the school where competitors in the public games received their training, and was so named from the circumstance that the competitors exercised naked (*gymnoi*). Athletic contests formed part of the social life of the Greeks from the earliest times, and their prin. religious festivals were marked by games.

The victor in any such contest was rewarded with the honour and respect of his fellow citizens, and a victory was looked upon as an honour to the whole state. In these circumstances the training of athletes became a matter of public concern; accordingly special buildings were provided by the state, and their management was entrusted to public officials. Men were paid to look after the youths who were training for public contests, to conduct the games at the great Athenian festivals, to exercise general supervision over the morals of the youths, and to adorn and keep up the gymnasium. This office was one of the public services, and great expense was entailed on the holders. Under them were the *sophronistae*, whose duty was to watch the conduct of the youths at all times, and especially to be present at all their games. The practical teaching and selection of suitable exercises for each youth were in the hands of the *paedotribae* and *gymnatae*, the latter of whom also superintended the effect on the constitution of the pupils, and prescribed for them when they were unwell. The *aleiptae* oiled and rubbed dust on the bodies of the youths, acted as surgeons, and administered any drugs prescribed. According to Galen there was also a teacher of the various games of ball. The gymnasia, built to suit these various purposes, were large buildings which contained not merely places for each kind of exercise, but also a stadium, baths, covered porticos for practice in bad weather, and outer porticoes where the philosophers and men of letters read public lectures and held disputations.

The gymnasium of the Greeks did not long remain exclusively devoted to athletic exercises. It soon began to be put to other even more important uses. The gymnasium became connected with education on one side and medicine on the other. Due training of the body and maintenance of health and strength of children were the chief part of the earlier Gk education. The education of boys was conducted in the gymnasia, save that part devoted to letters and music. As they grew older philosophers and sophists attended to talk and to lecture in the gymnasia. In Athens there were 3 great public gymnasia—Academy, Lyceum, and Cynosarges—each of which was consecrated to a special deity, with whose statue it was adorned; Plato's teaching in the Academy has given that gymnasium immortality. Aristotle conferred lustre on the Lyceum, and Cynosarges was the resort of the Cynics. Plato, when treating of education, devotes much time to G. Prodicus is said to have first pointed out the connection between G. and health. The Gk institution of the gymnasium never became popular with the Romans, who thought such training was conducive to idleness and immorality, and of little use from a military point of view, though at Sparta G. training had been chiefly valued as promoting bodily strength, such as was needed for the use of weapons and the endurance of hardship.

The first public gymnasium at Rome was built by Nero, and another was built by Commodus. Rousseau in his *Emile* was the first in modern times to call attention to the serious consequences of neglecting G. And Pestalozzi and Froebel, the Ger. educational reformers, emphasised the need for systematic physical training. It was not till the end of the 19th cent. that G. were regarded in England as more than recreation, and at present the larger public schools and univs. are supplied with elaborate gymnasia, and even the children in the council schools are taught simple gymnastic exercises. In Sweden, Denmark, Switzerland, Italy, and Russia systems are more or less distinct and enjoy a wide popularity. The Swedish system so greatly in vogue to-day was instituted by Pehr Henrik Ling (1776-1839) early in the 19th cent. for the Swedish children in school. By the end of the century it was recognised by adults also, and in a short time it was widely practised throughout athletic Europe, entering even into military training. The rhythmic method of G., founded by Émile Jacques-Dalcroze (q.v.) and known as Eurhythmics, was a development of the 20th cent., and though it enters into the curriculum of many trained gymnasts, it is more correctly looked upon as a mode of dancing. G. were included in the Olympic games for men and women. At the 16th Olympiad held at Melbourne, 1956, Russia won 8 titles (1 shared), Hungary 3, Germany and Japan 1 each. See C. A. Forbes, *Greek Physical Education*, 1929; N. E. Gardiner, *Athletics of the Ancient World*, 1930; A. J. Butler, *Sport in Classic Times*, 1930; also C. A. Westerbald, *Ling, the Founder of Swedish Gymnastics*, 1909, and E. Jacques-Dalcroze, *Eurhythmics*, 1930.

Gymnophiona, or **Apoda**, group of amphibians found in the E., in tropical Africa, and in central and South America, and also sometimes known as Coecilia. The characteristic feature is that the limbs have almost totally disappeared, with the result that the G. resemble worms. Like these latter, they are adapted to a subterranean life.

Gymnosophists (Gk *gymnos*, naked, *sophistês*, sage) was the name given by the Greeks to those Hindu philosophers who practised the most rigorous asceticism, regarding food and clothing as hindrances to purity of thought. They often lived as hermits in forests, and some, like Calanus, even burned themselves to death to enter a state of purer being.

Gymnosperms (plants with naked seeds), one of the 2 divs. of phanerogams or flowering plants. It differs from the other group, the angiosperms, in the fact that there is no closed ovary in the female flower at the time of pollination. When this process takes place the cone scales are separated from one another sufficiently to leave an open passage down to the ovules, and it is upon the micropyle of the ovule itself that the pollen falls. Thus there is no need for a stigma and style. After pollination the scales close up so as

to shelter the developing seeds, opening again when the latter are ripe, so as to allow them to escape. The flowers are all unisexual, and are generally without a perianth. The G. are perennial shrubs and trees, mostly evergreen, and include the families Cycadaceae, Ginkgoaceae, Gnetaceae, Pinaceae, and Taxaceae which together form the class Coniferae.



GYMNOSPERMS

A, twig of fire-tree bearing a young female cone; B, ovaliferous scale from A showing 2 ovules on the under surface (S)

Gympie, city of Queensland, Australia, 106 m. N. of Brisbane; industries include dairying, agriculture, gold-mining, and timber. Pop. 10,000.

Gynaecology (Gk *gunê*, woman; *logos*, a discourse), the study of diseases of women, particularly diseases of the urinary and genital organs. G., together with obstetrics (q.v.), has achieved the status of an independent speciality in medicine only in this century. Before then it was regarded as a branch of surgery. The Brit. College of Obstetrics and G. was formed in 1928, and the diplomas of the college became recognised as the necessary qualification for those wishing to specialise in the subject. In 1938 the college was granted the Royal Suffix and the Royal College of Obstetricians and Gynaecologists now has equal standing with the older Royal College of Physicians and the Royal College of Surgeons. Operative G. is concerned with surgical treatment of the pathological conditions of the female genito-urinary organs. Malignant growths of uterus (q.v.) and cervix uteri are a matter for hysterectomy or radium treatment. One of the signs of cancer of the uterus or cervix is abnormal bleeding and no woman should neglect such a sign, particularly after the change of life. A benign tumour of the uterus, known as a fibroid, may usually be removed without damage to the uterus, but, in the case of a large tumour, hysterectomy (removal of the womb) may have to be performed. Ovarian tumours and cysts are common gynaecological conditions and their removal by ovariectomy is a well-known operation in G. Ephraim McDowell (1771-1830) performed one of the first ovariectomies in 1809—a bold operation for those

days. He was followed in America by J. M. Sims, and in England by Spencer Wells (1818-97) and R. Lawson Tait (1845-99). Spencer Wells performed 1000 ovariectomies in 30 years' practice. With the improvement in obstetric practice to-day, the gynaecologist's work is not so frequently concerned with the repair of damage caused in childbirth as it used to be.

Gyndes, anct riv. of Babylonia. It has been identified with various modern rivs., among them the Diyala and the Mendeli, and with the old Nahrwan canal. According to Gk tradition (Herodotus i. 189) this riv. was diverted to enable Cyrus's troops to advance to capture Babylon.

Gyöngyös, tn of Hungary, in Heves co., at the ft. of the Mátra Mts (q.v.), 22 m. WSW. of Eger (q.v.). It has a wine, fruit, and tobacco trade, and manufs. railway equipment. Pop. 25,000.

Győr (Ger. Raab; Rom. Arabona), city of NW. Hungary, cap. of Győr-Sopron co., on the Danube (q.v.) at its junction with the Rába, 65 m. WNW. of Budapest (q.v.). It dates from Rom. times, is on the Budapest-Vienna road near the Czechoslovak border, and has been frequently under siege. It was the scene in 1809 of a Hungarian defeat at the hands of Eugène de Beauharnais (q.v.), and in 1849 of a defeat of the nationalists (see HUNGARY, History) by Haynau (q.v.). The tn was severely damaged during the Second World War, and was under insurgent control during the anti-Russian rising of Oct.-Nov. 1956. Many streets and squares are picturesque, with 17th and 18th-cent. buildings, and there is a fine cathedral (12th cent., rebuilt 18th cent.). Rolling stock, bridge components, and textiles are manufactured. The surrounding dist. is famous for horses. There is an airport. Pop. 66,000.

Győr-Sopron County, see GYÖR.

Gyp, pseudonym of Sybille Gabrielle Marie Antoinette Riquetti de Mirabeau, Comtesse de Martel de Janville (1849-1932), Fr. novelist, b. at the château of Coëtval in Bretagne. She began by writing stories for the *Figaro* and the *Vie parisienne*, but afterwards pub. numerous other novels in which, wittily and sarcastically, she describes the society of Paris. In 1882 *Petit Bob* appeared; in 1883 *Autour du mariage*, which has run through over 90 eds. Other works are *L'Éducation d'un prince*, 1890, *Mariage civil*, 1892, *Rijou*, 1896, *La Bonne Fortune de Toto*, 1897, *Le Journal d'un cochen de pessimiste*, 1918, *Souvenirs d'une petite fille*, 1927-8, *Du temps des cheveux et des chevaux*, 1929.

Gypaëtus, genus of birds of the subfamily Gypaetinae, family Falconidae. They are birds of prey, and are natives of the mt regions of Africa and Asia, also some parts of Europe. Among them may be mentioned *G. barbatus* (ammergeyer).

Gypogeraus, see SECRETARY BIRD.

Gypsophila, a genus of ann. or perennial herbs, family Caryophyllaceae, over 50 species, chiefly native to the E. Mediterranean region. *G. elegans* is an esteemed

ann., and *G. paniculata*, a perennial, of gardens.

Gypsum, hydrated calcium sulphate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), which occurs in large monoclinic crystals sometimes known as selenite. Marggraf in 1750 showed that *gypsum artefactum*, obtained from sulphuric acid and lime, was identical with the naturally occurring mineral. When G. is heated to 120° a hemihydrate, $2\text{CaSO}_4 \cdot \text{H}_2\text{O}$, is obtained, and on further heating the anhydrous calcium sulphate results. In this state the product is almost insoluble in water, and is identical with natural anhydrite. Another modification, soluble anhydrite, is obtained from G. by dehydration *in vacuo* over phosphoric anhydride. When G. is heated moderately there results a product known as plaster of Paris (G. was formerly worked in Montmartre, to the N. of Paris), which, according to Le Chatelier, consists mainly of the hemihydrate above mentioned. On addition of water this dissolves in part, forming a saturated solution which is, however, supersaturated with respect to the dihydrate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. Consequently some of the dissolved salt separates as G., and the solution can then dissolve more of the soluble form. By repetition of this process all the hemihydrate is converted into G., which separates in interlacing crystals, forming a solid mass. In the original burning of the G. care must be taken that too great heat is not applied, otherwise the product refuses to take up water at all, or at least very slowly. In this state is said to be 'dead-burnt.'

Gypsy, or **Gipsy**, member of a wandering race scattered over the world, and found throughout Europe, in W. Asia and Siberia, Egypt, North Africa, America, and Australia.

The word G. is a corruption of the Egyptian, and is found in different forms throughout Europe: *Gyptenær* in the Netherlands; *Aegyptier* in Germany (16th cent.); *Gitano* in Spain; and *Gyptos* in modern Greece. The name no doubt arose from the tale which G.s spread on their first appearance in Europe, that, for refusing to apostatise, they had been driven by the Saracens out of 'Little Egypt,' by some supposed to be a confusion between Little Armenia and Egypt, and by others identified with Epirus. The other name of the G.s is *Atzigan*, or *Atzingan*, derived, according to Miklosich, from the *Athinganoi* ('not to be touched'), a heretical sect formerly inhabiting parts of Asia Minor. This name appears in Rumania under the form of *Tsigan*, in Turkey *Tshingian*, in Hungary *Czigany*, in Germany *zigeuner*, in Italy *zingari*, and in Spain *zincali*. G.s have also been known as *Paroon* and *Pharao-Nephka*, again indicating their supposed Egyptian origin. *Heydens* or *Hidens* ('heathens'). Saracens, Bohemians, and Tartars. They have also been called Greeks, Germans, Flemings, etc., apparently from the country from which they happened to have come last. The G.s call themselves *Rom* (feminine

Romni), which may be derived from *Dromai*, Indian, or more likely from *Romanot*, the name applied to themselves by the Byzantines of the Grecian Empire.

The Athinganoi mentioned above were magicians, soothsayers, and serpent charmers who lived in Asia Minor as early as AD 810. According to one tradition they were the descendants of Samer, an outcast, since he fashioned the Golden Calf for the Israelites in the desert. The G.s cannot definitely be identified with these Athinganoi, but it is known that G.s passed into Europe from the further side of the Bosphorus in the early 14th cent., and traces of people with peculiarities not unlike those of the G.s may be found in E. Europe and Asia Minor prior to that century. In the rhymed paraphrase of Genesis, written before 1122 (ed. Ditmar, 1862), there is a passage referring to the 'Ishmaelish folk,' descended from Hagar's son. The writer calls them *Chaltsmide* ('iron-workers'), and says of them: 'They have neither house nor country; every place is the same to them. They roam about the land, and abuse the people by their knaveries. It is thus they deceive folk, robbing no one openly.' It is certain that as early as the 10th cent. there were itinerant smiths or tinkers, who sold their wares in many countries. The *Komodromot* ('village roamers') mentioned by Theophanes as hailing from Italy in 554 were probably smiths of the same order of the Chaltsmide. Even if G.s may not with certainty be identified with these vagrant pedlars, it is extremely probable that they assimilated them in large numbers. *Atkinson*, 'sorcerers and famous rogues,' lived at Constantinople about 1050, and an unnamed race, who 'wander like a cursed people' and dwell in 'little, oblong, black, low tents, like those of the Arabs,' are mentioned in Friar Simon's *Itinerarium* as living in Crete in 1322. It is certain that G.s existed in Corfu before 1326, and 20 years later they were reduced to a state of serfdom by the Empress Catherine de Valois. There can be no doubt that by the 15th cent. they had been settled for a long time in the Balkan Peninsula and in many of the countries N. of the Danube. They had possibly already made their way further W., but there is no very good authority for their appearance in W. Europe before the beginning of the 15th cent. In 1414 a troupe of G.s is said to have arrived in Hesse. In 1417 a large company of them, bearing letters of protection from the Emperor Sigismund, who declared that they were Christian penitents engaged on a 7 years' pilgrimage, were well received by various W. tns. Some had reached Hamburg, Wismar, and Lübeck in 1417; others arrived in Switzerland, Leipzig, and Frankfurt-on-the-Main in 1418; they entered Bologna on their way to Rome in 1422, and reached Paris in 1427. In 1423 a second immigration followed, led by Ladislaus, *Wotowode* ('count') of the Cigani, who also was furnished with letters of protection by Sigismund, and who appears to have

hailed from Hungary. Between 1438 and 1512 the G.s came in hordes, swarming over Germany, Italy, and France. They probably reached England and Scotland about 1500. The exodus of the G.s from Rumelia and the E. countries is generally accounted for by incursions of Turks who subdued the kingdoms of Greece, Serbia, and Bulgaria. The *Constitutions of Catalonia*, 1512, speaks of the G.s as Greeks, which shows that they continued for a time to live in Greece under Turkish rule. The most nomadic of the tribes probably first moved to Walachia and Transylvania, and then, as others followed in ever-increasing numbers, moved further and further westwards.

From the earliest description of G.s it is evident that they then possessed those peculiarities of physique and mode of life which distinguish them to-day. The G.s who settled in Germany in 1417 are described by Krantzius in his *Saxonia* and subsequently by Münster in *Cosmographie*. Most of them bivouacked in the fields, while their count and knights sometimes put up for the night in an inn. Some of them rode on horseback, others following on foot, while the women and children travelled in wagons. They had no honest means of livelihood, but practised palmistry and fortune-telling, and before very long became notorious for dishonest dealings and for theft. In appearance they were described as being black and dirty. At first they were well received if not welcomed by the chiefs of Europe. At Utrecht, in 1420, they were given pots of ale, bread, and a hundred herrings, probably because they had a 'written permission from the pope to visit the Christian land,' and in the following year 20 schellings were paid from the public purse of Middelburg to a count of 'Little Egypt.' In 1505 James IV of Scotland gave Antonius Gaginius, a count of Little Egypt, letters of recommendation to the king of Denmark. They were entertained by the earl of Surrey in Tending Hall, Suffolk, in 1519, and were given 'two towers for their residence' by Sir Wm St Clair, whom they had delighted by their dancing and acting. But before very long their popularity had waned. Middelburg, which had previously given generous hospitality to the wandering strangers, in 1460 sent Constantine, count of Egypt, a bribe of 10 schellings that his troupe might not visit the tn. Country folk had been gulled by these wily insinuating visitors, and small farmers and owners of barns looked forward with dread to any repetition of their visits. In 1560 an ordinance of the states of Orleans enjoined all Bohemians or Egyptians to quit the kingdom under pain of death, and similar edicts had been and continued to be issued in many European countries. At Durham, in 1592, 5 men were hanged 'for bring Egyptians,' and at Edinburgh, in 1611, four met with the same punishment 'for abiding within the kingdom, they being Egyptians.' In Hungary and Germany G.s were racked and tortured as late as the

18th cent. They are also accused of definite malpractices and crimes, often without any foundation. As early as 1424 they were thought to be emissaries of the Turks, probably on account of their dark, foreign faces and strange tongue. Certainly they were used as spies by Frederick the Great. But far more dreadful crimes than treachery and stealing were attributed, most unjustly, to the G.s. In 1692 4 Estromadura G.s were taken captive, and under the torture of the Inquisition confessed that they had devoured a friar,



A GYPSY CAMP IN ENGLAND

a pilgrim, and a woman of their own race, and were in consequence put to a painful death. The charge of cannibalism was first made in 1547. In Hungary, in 1782, 45 G.s were hanged, drawn, and quartered on a charge of having eaten the victim of a supposed murder. The case was subsequently inquired into and the charge was proved false, for there had been no murder. Since the beginning of the 17th cent. G.s have frequently been charged with kidnapping children, and many lurid tales have been told and written on the subject. In 1872 47 G.s were imprisoned in Germany for child-stealing, but the charge was afterwards proved false. G.s have frequently been deported from one country to another, as from Scotland to the Barbados, and other Amer. colonies in 1665 and 1715, and from the Basque

country to North Africa in 1802. Even in the 20th cent. Ger. legislation has been busy with the G. problem. In Rumania and E. Europe a certain class of G.s called *Robi* were deprived of their liberty, bought, sold, and exchanged, and treated as slaves. They were granted freedom in Hungary and Transylvania between the years 1781 and 1782, and in Moldavia in 1856. The Empress Maria Theresa interested herself on their behalf, and ordered those G.s in her states to be instructed in agriculture with a view to their permanent settlement. A great improvement became evident in their character and bearing, and in 1866 they were declared Rumanian citizens with full political rights. The G.s of Bulgaria have not enjoyed similar privileges and in 1906 held a congress at Sofia, protesting against their political status and demanding their recognition as citizens.

G.s from the beginning of their history have shown great versatility in turning their hands to any kind of work. In Rumania and Turkey a large proportion of the settled nationalised G.s are bricklayers. In Hungary and Transylvania many of them follow some regular trade and have fixed habitations. They wash gold from the sand of the rivers, and they work iron or copper; some are horse-dealers, others are carpenters and turners, and some even keep wine-shops or public-houses. In England they are generally thought of as hawkers, tinkers, knife-grinders, peg-makers or basket-weavers. The nomadic G.s still carry on the traditional craft of metal-work, while some make sieves and traps. They also cast bells, the church bell (1726) of Edzell in Forfarshire being their work. In Scotland they were engaged during the 18th cent. on pewter, copper, and lead work, and also executed some engravings and paintings in somewhat primitive fashion. They were also known by the bullets and cannons they fashioned in Hungary, and had an iron-foundry at Little Carron in Scotland. They make excellent farriers and good horse-dealers. They are famed for their musical talent. The G. musicians, it is thought, originally belonged to the serf class, and were kept within the precincts of courts and palaces to provide entertainment. The women were regarded as particularly graceful dancers, and danced to the accompaniment of the fiddle. In 1530 we hear that they 'danst before the king in Holyrud-house' in Scotland. They won a high reputation in Wales as harpists and in Hungary as fiddlers. In fact, Liszt declared, though his theory has been hotly disputed, that the Hungarian national music originated in them. G.s show special talent in singing or reciting old ballads and folk-songs, often to the accompaniment of the guitar. They have too a great aptitude for telling fairy stories. These tales do not appear to belong to their own tribe, but to have been picked up in the various countries which they have visited, and are passed on by word of mouth from one generation to-

another. In this connection their extraordinary gift of speaking in foreign languages may be mentioned. The G. women are famous fortune-tellers. They seldom repeat their charms and incantations in their own tongue, but in Greek or Rumanian in a Romanised dialect. They tell fortunes not only by palmistry but by playing-cards. They use the Tarot, a special set of cards, each card having a mystical meaning of its own, the secret of which they keep within their own tribes. It is quite possible that playing-cards were first brought into Europe by the G.s, and were originally only used for telling fortunes and for lotteries, later being employed for games and gambling. G.s were formerly despised for their looks, the writers probably being unable to recognise their undoubted beauties behind the dirt. They are dark-skinned, with dark, lustrous eyes, thick dark hair, often coarse and frizzled, and gleaming white teeth. They show off their darkness by wearing bright oriental colours. The women bind their hair with gaudy silk handkerchiefs, and show an inordinate love of jewellery. Though paying great attention to their clothes, they are at the same time shabbily and untidily dressed, and are slovenly in their habits. Their great moral defects are probably due to the vagrant life the race has lived from its beginning. G.s as a whole have no sense of responsibility, and have not the same sense of honour as other European races. They are not religious by nature, but frequently adopt the prevailing religion of the country in which they travel. Many of them still retain old superstitions, probably the remnants of a religion they have lost. Some of these superstitions, such as the worship of trees and serpents, may be found in their folk-tales and songs. G.s seldom go to church, except to baptise their infants, to marry, and to bury their dead. They are fatalists, and have the philosophy of the open high-road. To their friends they are loving and lovable, and generous to excess.

Language.—*Romani tīb* ('gypsy language') from *rom*, 'gypsy', 'man,' is the same language all over the world, though the dialectal differences from country to country are so great that, for instance, an Eng. G. would have great difficulty in understanding a Gk G., and possibly could not understand him at all.

The researches of Ruediger (1777) and Grollmann (1782) in Germany, and of Marsden (1783) in England, but particularly of A. F. Pott, proved that the language of the G.s was unmistakably connected with some Indian language. Some of the words in *Romani*, however, have a more archaic form than those of modern Indian dialects. The speech of the Armenian G. shows more resemblance to Sanskrit than does the speech of the European G., and the speech of the Asiatic (or Syrian G.) is peculiar in itself, and entirely different from any other dialect. These facts have led scholars to think that the G.s originally came from India, and that there must have been

various great movements. The route taken can be determined in part from the elements other than Indian present in *Romani* vocabulary, and even more so from the phonetic changes in the development of the *Romani* dialects. The question in which Indian sub-branch *Romani* had its origin, has been much discussed, and is still an open problem. It is, however, generally agreed that it originated in NW. India. Separated from the other members of the Indian family, original *Romani* has developed upon lines of its own. Some of its most important and characteristic features have been developed outside India, firstly in Persia, where, according to Prof. Sampson (1926), the G.s, probably before the 10th cent. AD, split into 2 separate bands, one travelling N. by way of Armenia and becoming the ancestors of the Boshia and of the European G.; and the other, from whom descend the Nawar, Karachi, and Helebls, journeying southwards into Syria, whence some of them passed into Egypt and Asia Minor. Sampson seems to be right in pointing out that this main separation took place on Persian soil; indeed while Persian loan-words are found in the speech of both Boshia and Nawar, Armenian borrowings seem to be wholly lacking in the dialects of the latter. On the other hand, the fact that there is in *Romani* a large percentage of Persian words, but, according to Miklosich (1878), no Arabic element, shows that the G.s could not have resided in Persia long after the Muslim conquest to have been so completely unaffected by the language of the conquerors, and that they must have made their way to Europe via Persia and not through Arabia. That is to say, the movements from the E. must have taken place long before the 10th cent. AD. Important phonetic changes and additions in vocabulary arose in Byzantine Greece, in all of which the European *Romani* dialects differ from Armenian and Asiatic *Romani*. The G. tongue possesses more Greek than Persian words, so that it has been suggested that their stay in Greece was more prolonged than it had been in Persia. Some scholars have thought that they lived in Greece from very early times, but this theory cannot be accepted, for the G. vocabulary contains no old forms of Greek and not even many forms of early Slavonic words.

Various developments of minor extent, due to the influence of local surroundings, appear later in individual *Romani* dialects, dating from the time of separation within Europe itself. Mention may be made of *Romani* borrowings from Rumanian, Slavonic (mainly Bulgarian and Serbian, but also Russian and Czech), Spanish, Italian, Fr., German, Eng., and Welsh. At the present day there are at least 3 distinct groups of dialects, the Armenian, the Asiatic (other than Armenian), and the European; each one, and especially the last, is subdivided in numerous dialects, the existing differences being due to the adoption of words and idioms of the different peoples with which

the G.s have come into contact. The G.s of Wales and of Turkey speak the purest Romani, and retain the oldest forms. In the majority of countries, however, Romani is being broken down by the stress of modern life. The language of Anglo-Romani shows an almost complete loss of grammatical inflections and a great part of its original vocabulary: it has thus a mixed language, having adopted many Eng. words, forms, and idioms. In Spain, Italy, Norway, and other countries the same process of levelling has been taking place, and in many cases the original inflections have been superseded by those in use among their neighbours. Consequently the language has deteriorated in grammar, although its vocabulary has been enriched by the adoption of foreign words. In a country like Britain, where attendance at the national schools is compulsory, where G. children are brought into daily contact with other children, and are obliged to learn and speak English, their assimilation with the land of their adoption must gradually take place. On the other hand we use quite a number of Romani words in our everyday speech without realising that we do. The most common of these words is *dad*, in Romani, 'father'; cf. Dardic *dado*, Ossetic *dadu*, Sanskrit, *tāt*, Hindi, *tāt*. The number of G.s has been estimated as between 2 and 5 million, of whom about 1 million are in Rumania; but not all of them still speak Romani. There are also a certain number of G.s in the U.S.A.

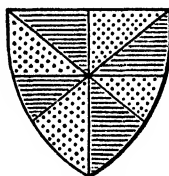
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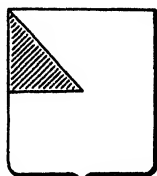
Gyration, Centre of, see CENTRE of GYRATION.

Gyrfalcon, see JERFALCON; FALCON.

Gyron, in heraldry a figure formed by 2 straight lines, drawn from any 2 points on the boundary of a shield, and meeting in an acute angle in the fesse point.



GYRONNY



GYRON

Gyronny, heraldic term describing a shield divided per fess and per saltire.

Gyroscope and **Gyrost**, mechanical instruments the action of which depends on the properties of rotating bodies. The ordinary form of G. (Fig. 1) consists of a heavy wheel A mounted on an axis BC, which is fixed in a ring BDCE. This ring in turn is capable of rotation about the axis DE, which is fixed in another ring also capable of rotation about the axis FG. The instrument is supported by a heavy stand. The whole is arranged so that the 3 axes of rotation in any position pass through a fixed point, which is the centre of gravity of the wheel. The wheel is thus capable of rotation about 3 mutually perpendicular axes and its axis may thus take up any direction. If the wheel is rotated rapidly it is found that a considerable force is required to change the direction of the axis of rotation. In the absence of any external forces, the rotating axis will preserve a fixed direction in space. This was used originally by Foucault to prove the rotation of the earth. Thus if the axis is initially pointed to some star and the wheel kept rotating rapidly, the axis will remain pointing at the star irrespective of the earth's rotation. Thus it will appear to an observer to turn about an axis parallel to the axis of the earth, and follow the star as it rises and sets. It is on this principle that the G. compass is made. So long as the rotation of the wheel can be maintained, the axis, if originally pointed to the pole star, will remain in that direction. By means of sev. rapidly rotating wheels a telescope stand has been constructed which will remain fixed irrespective of the motion of

a ship. An important practical application of the theory is seen in the torpedo. It is usually required that the original direction should be kept after the torpedo has been fired, and so the steering gear is connected with a G. The wheel is set rotating very rapidly at the moment of fire, and the axis of rotation remains fixed in direction. Thus if the torpedo shows any deviation in course, the connection between the rudder and the G. at once produces a steadying effect. So long as the rotation remains very rapid, it is found that the general line of fire is

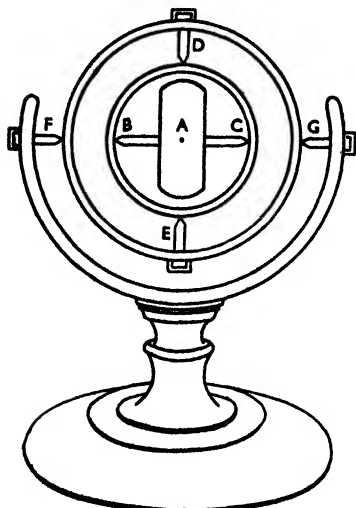


FIG. 1
GYROSCOPE: ESSENTIAL MECHANISM

accurately kept. The G. has also been applied to the mono-rail by Louis Brennan, an Eng. inventor, the stability of the train being secured by 2 gyroscopic wheels revolving *in vacuo* at a high speed. A more simple form of the G. is sold as a toy. It consists of a wheel set on an axis in a ring, like the wheel A and the ring BDCE in Fig. 1. This ring is fixed on an axis in the same straight line as BC, the end of which fits into a small cup on the top of a stand provided. In Fig. 2 let O represent the cup, and let OBO be the position of the axis as it is placed in the cup after the wheel has been rapidly rotated. It is found that the whole instrument revolves about the vertical axis OY, the end C gradually dropping lower and lower as the rotation of the wheel gradually dies away. This turning about the axis OY is known as *precession* (q.v.). Another motion of an oscillatory character, known as *nutation*

(q.v.), also exists, but this is so small as often to be hardly perceptible. The reason for precession may be seen from the following: Let ABCD be a wheel rotating about an axis through O perpendicular to the plane of the paper, and also turning about the axis BD, Fig. 3. Let any particle

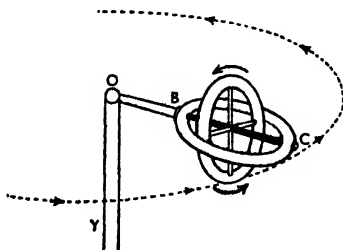


FIG. 2
TRACK AROUND A VERTICAL AXIS

of mass m move in the circle from P to Q in a short time τ . Then if ω_1 is the angular velocity of the wheel, $POQ = \omega_1 \tau$. If ω_2 is the angular velocity about BD, P is also moving up out of the plane of the paper

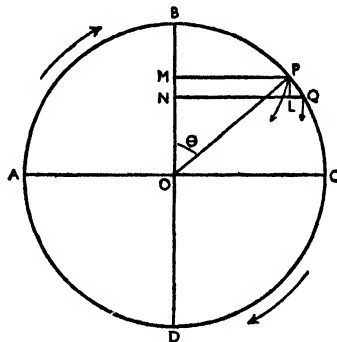


FIG. 3
CAUSES OF PRECESSION

with velocity $\omega_2 PM$ when PM is the perpendicular on BD. At Q the velocity out of the plane of the paper has increased to $\omega_2 QN$, i.e. it has increased by $\omega_2 QL$. PQ may be considered a straight line since the time τ is very small, and its length is $OP \cdot \omega_1 \tau$. Hence this increase of velocity $= \omega_2 PQ \cdot \cos \theta = \omega_2 OP \cdot \omega_1 \tau \cos \theta = \omega_1 \omega_2 \tau \cdot OM$. Hence the momentum of the particle upwards out of the paper increases at the rate $m \omega_1 \omega_2 OM$, i.e. proportional to its distance from AC. It must therefore be

acted upon by a force $m\omega_1\omega_2 OM$ upwards out of the plane of the paper. Similarly particles on the arc AB are acted upon by an upward force, whilst those on AD and DC are acted upon by a similar downward force. Thus the rotation about BD is due to a couple which would turn the wheel, when not rotating, about the axis AC. Generally the effect of a couple on a rapidly spinning wheel is to produce displacement of the axis of rotation perpendicular to the plane of the couple. Hence in Fig. 2 the effect of the force of gravity and the support at O is shown in a turning about a vertical axis. Though the terms G. and gyrostat are often used for one another, the distinction usually made is that the gyroscopic flywheel rotates about an axis of which one point is fixed, whilst the gyrostat is free to move on a plane. The common model of a gyrostat consists of a flywheel enclosed in a case, slits being left for the string to set the wheel in motion. When the wheel is rotated the instrument may be placed on a table on its point (in the same straight line as the axis of the wheel) or on any point of the bearing edge (in the plane of the wheel itself, and usually consisting of a regular 16-sided figure). In the former case the motion is exactly that of a spinning top, which is the most simple practical form of gyrostat. Other common forms are a hoop and the 2 wheels of a bicycle. The general properties of a rotating wheel hold equally well for these cases. Thus the precession of a spinning top, the circular path of a hoop moving

with its plane inclined to the vertical, and the turning of the handle-bars of a bicycle to preserve equilibrium are to be explained by methods similar to that employed in Fig. 3. In the construction of an aeroplane, where the engine parts and the propeller are rotating rapidly, the gyroscopic effect has to be considered. The barrels of guns and rifles are fitted with spiral grooves to give the projectile a rapid rotation on its axis, thus tending to keep the direction of the axis unchanged. The rotation of the earth about its axis makes its action very much like that of a top suspended by a string, and corrections for precession and nutation have to be made in astronomical calculations. Many other cases may be quoted. See M. Davidson (editor), *The Gyroscope and its Applications*, 1948; also K. I. T. Richardson, *The Gyroscope Applied*, 1954.

Gythium, one of the old seaports of Greece, situated on the Gulf of Laconia. The Spartan fleet was stationed here, and consequently during the time of the wars against Athens it suffered many vicissitudes. At the present day the larger part of it is sunk in the sea. It is now a modern seaport with a good harbour. Pop. about 8000.

Gyula, tn of Hungary, in Békés co., on the White Kőrös (q.v.), 10 m. ESE. of Békéscsaba (q.v.). It has a 14th-cent. castle, and was the home of the ancestors of Dürer (q.v.). There are manufs. of textiles, chemicals, and spirits. Pop. 25,300.

Gyulafehérvár, see ALBA IULIA.

H

H, 8th letter of the Eng. alphabet, as it was of the Semitic, Greek, Etruscan, and Lat. from which it is derived. It was formerly written *Ĥ*, and was called *heth* or *kheth*. The Semites used it as a strong aspirate, much stronger than in modern W. use. The Greeks, of course, borrowed it with the rest of the symbols, and early made use of it either (1) to represent a long *e* sound, *ela*, to distinguish it from the short; or (2) for smooth and rough breathings, the latter being the aspirate, so that the aspirate *h* passed into the Rom. alphabet. Yet by 240 BC it was quite neglected by the common people just as it is to-day, so that Catullus pokes fun at Arrius, who tried to be correct, but always succeeded in getting his aspirates in the wrong place, so that he said *hinsidias* for *insidias*, etc. In modern Italian the *h* as an aspirate has quite disappeared (although it is still written in some words, like *ho*, *hanno*, and in combinations *ch*, *gh*), and it is fast becoming obsolete in Fr. Sometimes it represents other sounds; for example, the Sp. *h* is often a substitute for the Lat. *f* (*hijo*, from *filius*), but it is not pronounced. In Eng. it is not infrequently put for *c* and *s*. Thus the prefix *hyper-* corresponds to *super-*; the first syllable of *hex-*agon corresponds with *six*, whilst *hum-dred* and *cent-ury* are real doublets. In Eng. the *h* may be anything from a strong aspirate to a cipher. Thus it is very pronounced in *history*, less so in *when*, and not at all in *hour*. See ALPHABET.

Haag, Den, see HAGUE, THE.

Haakon, or **Haco** (Old Norse *Hakon*), name of 7 kings of Norway. The most important are listed below.

Haakon I (d. 961), called the Good, was the son of Harold Fairhair and was brought up as a Christian by Athelstan, king of England, but failed in his efforts to convert his own people. His foster-father gave him ships in 934, and he sailed home and was soon proclaimed king (c. 935). The sons of Erik, H.'s half-brother, rebelled against him, and he was eventually killed in battle against them.

Haakon IV (1204-63), called the Old, succeeded to the throne c. 1220, put to death Earl Skule in 1239, as the latter had become the centre of intrigue. He added Iceland and Greenland to his kingdom. But his defeat at Largs in 1263 by Alexander III of Scotland lost him the Hebrides.

Haakon VII (1872-1957), king of Norway, was a Dan. prince, Charles, 2nd son of Frederick VIII of Denmark. He married Maud, the youngest daughter of Edward VII of England (d. 1938); and his only son, Prince Olaf, was b. in 1903. In 1905 Norway separated from Sweden, and in the following year Prince Charles

took the anct name of Haakon and was crowned king. When Germany invaded Norway in April 1940 H. led the heroic resistance of the Norwegian Army, supported by the Brit. and Fr. allies. He rejected Hitler's demands for surrender, and showed great courage during the Ger. invasion of his country. H. came to Britain in June 1940 after the allied forces abandoned N. Norway, and returned to Norway on the cessation of hostilities. His golden jubilee as king of Norway was the occasion for great national rejoicing.

Haapai, one of the 3 main groups of is. of the kingdom of Tonga (q.v.).

Haarlem, chief tn of the prov. of N. Holland, Netherlands, 11 m. W. of Amsterdam. It presents the appearance of a typical Dutch city, with its long, narrow canals and gable-roofed houses. The prin. buildings, situated in the market-place, are the Fishers' Hall (built in 1603 and containing the archives), the tn hall, the Stadsdoelen, and the Groote Kerk (Great Church), dedicated to St Bavo, dating from the close of the 15th cent. This church has a world-famous organ consisting of 3 keyboards, 68 registers, and 5000 pipes, and constructed by Christian Mulder. The Frans Hals museum contains many famous paintings of Hals and other Dutch artists. The statue of Laurens Janszoon Coster, who shares with Gutenberg (qq.v.) the claim to have invented movable printing type, stands in the market-place. Cotton manuf., dyeing, shipbuilding, printing, and typefounding form the chief industries of H. The city carries on an extensive horticult. trade, rearing the celebrated Dutch bulbs, especially the hyacinth and tulip. H. has played no inconsiderable part in the hist. of Holland; it took part in the revolt of the Netherlands against the Sp. tyranny in 1572, and was forced to submit to Alva's son, Don Frederik of Toledo, in 1573; it owed its final deliverance to William of Orange, who rescued it in 1577. H. was the bp. of the celebrated Dutch painters Ostade, Berchem, Ruysdael, and Van der Helst. Pop. 167,000.

Haarlem Lake (Dutch *Haarlemmer Meer*), in the prov. of N. Holland, Netherlands, a triangular-shaped expanse of now fertile land reclaimed by dint of unremitting industry in 1840-53 from a sheet of water formed by the great inundation of the 16th cent. It lies between Amsterdam, Haarlem, and Leyden, and has an area of about 72 sq. m. It communicates through the R. IJ with the IJsselmeer. Pop. 40,392.

Habakkuk, a minor prophet of whom nothing is known historically, although legend, in such works as *The Lives of the Prophets*, has much to say. Hab. iii is

a psalm ascribed to the prophet H., but which internal evidence suggests to be post-exilic. The problem of the earlier chapters is more difficult. The book opens with a lament asking why the wicked are suffered to continue (vv. 2-4), and the prophet is told that God is about to raise up the Chaldeans as an instrument of vengeance. Then follows another complaint (vv. 12-17) and in chapter II. 2 comes God's answer. Then follows the song of triumph of the nations over their oppressor. Some hold that the world-power over which the nations exult is Assyria, and that the difficulties in this interpretation are due to editors of the 5th or 4th cent. BC. Others believe the prophecy was primarily directed against the Chaldeans themselves. The date of the original composition was towards the end of the 7th cent. BC (c. 615). See G. W. Wade, *Book of the Prophet Habakkuk* (with introduction and notes), 1929.

Habberton, John (1842-1921), Amer. author, b. Brooklyn. He was successively printer, soldier, merchant, and journalist. From 1876 to 1893 he was on the editorial staff of the *New York Herald*. His most popular work was *Helen's Babies*, 1876. He also wrote *The Jericho Road*, 1877, *Deacon Crambitt* (a play), 1880, *All He Knew*, 1890, *The Tiger and the Insect*, 1902, *Other People's Children*, 1877, *Life of George Washington*, 1884, *Some Boys' Doings*, 1901, and *Rudge and Toddie*, 1908.

Habeas Corpus, in law, a writ directed to a person having custody of a prisoner commanding him to produce the body (*habeas corpus*) of the prisoner before the court, with a statement of the day and cause of his detention. The personal liberty of the subject has ever in England been the subject of jealous regard, and as early as Magna Carta the principle underlying the writ of H. C. was solemnly enacted. Up to 1679 the constantly recurring acts of repression in the name of the king, notably in the time of the Star Chamber, demonstrated the need for a far more stringent system of procedure. The Petition of Right explicitly demanded that in future the orders of the sovereign should not be sufficient ground for incarcerating his subjects. But after the historic arrest of Jenks in 1676, when the judges decided that a change of prison quarters fully exonerated the prison governor from all liability for failure to produce the prisoner, the famous Habeas Corpus Act of 1679 was passed to meet the new difficulty. Briefly, the Act provides: (1) that a writ of H. C. may be claimed by any prisoner except one committed for treason or felony, the writ to be returnable immediately before the judge granting it with a statement of the cause of the commitment; (2) prisoners committed for treason or felony are to be brought up for trial at the next ensuing assizes, unless the Crown witnesses cannot be produced so soon; (3) heavy penalties for shifting the custody of the prisoner from one prison to another without sufficient reason or authority, or for neglecting to give the prisoner a true copy of the warrant of commitment; (4)

penalties of £500 for sending persons to prison beyond the seas or re-committing them after delivery by H. C. The flaws in this Act were that there were no safeguards against (a) excessive bail, (b) a false return, or (c) illegal civil detention. The Bill of Rights remedied (a), and an Act passed in 1816 extended the Act of 1679 to cases of civil detention, and remedied (b) by empowering the judges themselves to examine the truth of the return. The Habeas Corpus Act of 1679 has occasionally been suspended in times of rebellion and civil commotion, e.g. during the Jacobite rebellions of 1714 and 1745 and the agitations excited out of sympathy for the Fr. revolutionaries at the end of the 18th cent. The writ has been used before now to restrain the rights of a parent over a child, and of a guardian over his ward; and again, the mother of an illegitimate child can claim the custody of such a child as against the reputed father by suing out a writ of H. C. On the person detained being produced before a judge the latter has 3 courses open to him. He may make no order at all, discharge the prisoner, or release him on bail.

In the U.S.A. the Federal and state legislatures have founded their procedure on the Act of 1679. The U.S. constitution provides that 'the privilege of the writ of habeas corpus shall not be suspended unless when, in cases of rebellion or invasion, the public safety may require it.' This question has caused discussion as to whether the right of suspension is vested in the President or in Congress; and some difficulties are caused by the conflict of state and Federal courts with regard to the right to issue a H. C.

Haber, Fritz (1868-1934), Ger. chemist, b. of Jewish parents, at Breslau. Studied at Berlin and Heidelberg, and became prof. of chem. at the Kaiser-Wilhelm Institute for Physical Chem. (1911). He pub. works on electro-chem. and the thermodynamics of gas reactions, and in 1908 produced ammonia synthetically. He is chiefly remembered for his researches, with Karl Bosch (1874-1940), industrial chemist, which resulted in a process, called the Haber-Bosch process, of synthesising ammonia from hydrogen and the nitrogen of the air. These researches kept Germany supplied with nitrates for explosives and agric. purposes during the First World War when Chilean supplies were cut off. He was awarded the Nobel prize for chem. for 1918 (1919). As a protest against anti-Semite legislation by the National Socialist Gov. he resigned the directorship of the Kaiser-Wilhelm Institute and his chair at Berlin Univ. Later he lived at Cambridge, where he was given laboratory facilities by Prof. Wm Pope.

Haber-Bosch Process, see HABER, FRITZ. **Haberdashers' Company**, one of the 12 greater livery companies of the city of London, granted its first charter by Henry VI in 1448. The company's hall, destroyed in 1668 and again in 1940, has been rebuilt on its original site and was

reopened in 1956. Since 1483 39 members of the H. C. have held office as lord mayor of London.

Habibullah Khan (1871-1919), amir of Afghanistan, son of Abdur Rahman. He succeeded his father in 1901. He renewed the arrangement with Great Britain by which the control of foreign relations was delegated to the Brit. Gov. in consideration of protection being given by the latter to the amir in the event of unprovoked aggression. He continued a loyal friend of Great Britain in spite of blandishments in the shape of Ger. gold and seductive promises, and held out against Ger. emissaries during the First World War. He was a polyglot of some attainments, and was so far an occidental in taste that he played golf and followed horse-racing, insisted on his courtiers wearing European dress, and limited his wives to three. He was assassinated.

Habington, William (1605-54), poet, b. Hendlip, Worcs. He belonged to a Catholic family, and his father and uncle were both implicated in Habington's plot. Having resisted the pressure brought to bear upon him to become a Jesuit, he went to Paris and married Lucy Herbert, daughter of the first Lord Powys, whom he immortalised in *Castara*, 1634, a vol. of lyrical poems, some of which are of great sweetness and marked by unusual purity. He also wrote *Historie of Edward the Fourth*, 1640; *The Queene of Arragon*, 1640, a tragic-comedy; and *Observations upon Historie*, 1641.

Habit, in physiology. It is well known that every time a certain stimulus gives rise to a specific reflex, the response to the stimulus comes more easily, so that if the cycle is repeated often enough it becomes automatic, and even unconscious, and thus a H. is formed. When any nerve ending is stimulated an impulse passes along its specific nerve fibre until the spinal cord is reached. In the cord there is a choice of sev. paths up to the brain, or directly to the nerve fibres passing out of the cord (*see diagram*). It is not known what makes the impulse take one of these courses more than another for the first time. The direction must depend upon conditions of tension and of block existing at the moment in the nervous system. But once a stimulus has travelled along a certain path, it becomes the easiest path, and will always be used unless there is a block in the path from some other cause. The process is often, and very fairly, compared to the making of ruts in a road. Modern psychologists are agreed that it is primarily due to the physical properties of the matter of which the nervous system is composed. A H. is thus a conditioned reflex action, or a series of such actions. Most H.s., e.g. walking, swimming, cycling, etc., are complex, and involve the co-ordination of various groups of muscles. In fact the growth of a H., in the physiological sense, can be very well seen in the baby feeling its feet and learning to walk, or in a boy learning to swim. Actions which at first occupy the whole attention, which are laborious, irregular, and varied,

become more and more uniform, and less and less conscious, until they can be continued for long stretches of time without any effort of the will. Persons with a neurotic temperament contract H.s. far more readily than lethargic individuals. It is this fact that explains *H. spasms*, the well-known *Hes.* The movement of the *tic* is at the first the reflex to an irritation,

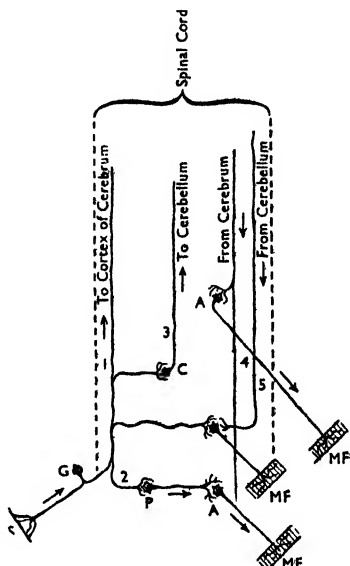


DIAGRAM TO ILLUSTRATE SOME OF THE PATHS THAT A STIMULUS TO AN AFFERENT NERVE MAY TAKE

S, surface at which sensory impulse is received; G, cell of posterior root ganglion; P, cell of posterior horn; C, cell of Clarke's column; A, cell of anterior horn; MF, muscle fibre

1, fibre of posterior columns; 2, fibre of coma tract; 3, fibre of Flechsig; 4, fibre of pyramidal tract; 5, fibre of tract of Loewenthal

such as ill-fitting, uncomfortable clothes, some irritation of the eyes, etc., but owing to the peculiarly irritable state of the nervous system at the time the action rapidly gets beyond the control of the will. Alcoholism and drug H.s. can be explained in the same way. The law of H. applies equally to mental and bodily functions, and is of vital importance to educationists, for education may be described as the development of H.s. The greater the number of mental processes reduced to the realm of H., the more is the brain set

free for further thought, so that the aim of the educationist is to create good H.s and many.

Habit and Repute, in Scots law, a phrase indicating the inference of a legal relationship or fact of which the law takes cognisance from the *general belief* that such relationship exists or that such event has happened. It is especially applicable to the presumption of marriage from evidence of general reputation as husband and wife coupled with cohabitation. Erskine states that the repute in such a case must be that of substantially all who have an interest to inquire. The term also has a special significance in regard to the condition of a person accused of theft.

Habitual Drunkards, see DRUNKENNESS; INEBRIATES.

Habsburg, see HAPSBURG.

Hacha, Emil (1872-1945), Czech politician, president, and lawyer, b. Trhové Šumy, Bohemia. After practising as an advocate he became president of the Czechoslovak supreme administration court, 1925, and, in 1938, when Beneš resigned following the Munich agreement (q.v. and see also CZECHOSLOVAKIA), he was elected to succeed him. Tried in vain to maintain the independence of the State after the loss of the Sudetenland and consequential Ger. demands, and on 14 Mar. 1939, when the Ger. forces were marching into the country, he was summoned by Hitler to Berlin where, under duress, he signed a declaration placing his country under Ger. 'protection.' H. was left nominally in office, but really as a 'puppet' 'State president' of the 'Protectorate of Bohemia and Moravia,' and appears very soon to have urged his fellow countrymen to throw in their lot with their new masters. In spite of his denunciations of Beneš (q.v.) the people, throughout the occupation, continued to look upon the latter as their leader, and remained as bitterly hostile to the Germans at the end as in the beginning. It was decided by law by the exiled Czech Gov. that special national courts should be constituted to try guilty Czechs and Slovaks, particularly members of the H. gov. in the Czech lands (and of the Tiso gov. in Slovakia). But H. did not long survive the liberation of Czechoslovakia, dying in imprisonment on 27 June 1945.

Hachette, Jean Nicolas Pierre (1769-1834), Fr. mathematician, b. Mézières, and educ. at the college of Rheims. Through the influence of Gaspard Monge he obtained the post of assistant prof. in the newly-estab. Ecole Polytechnique (1794), becoming prof. of descriptive geometry in 1797. In 1816 he lost his chair on the accession of Louis XVIII. His chief works are *Deux Suppléments à la géométrie descriptive de Monge*, 1811, *Éléments de géométrie à trois dimensions*, 1817, *Traité de géométrie descriptive*, 1822.

Hachette, Jeanne, Fr. heroine, b. Beauvais about 1454. Her real name was Jeanne Laisné. In 1472 during the siege of Beauvais by Charles the Bold (q.v.), the garrison having been reduced to 300 men,

the women under Jeanne H. (so called from the weapon with which she was armed) took up the defence and saved the tn. See BEAUVAIS.

Hachette, Louis Christophe François (1800-84), Fr. publisher, who estab. a publishing house in Paris, 1826, for books designed to improve the system of school instruction, especially the classics. In 1850 H. extended the pubs. to include books of almost every type, as well as magazines.

Hachinohe, city of Aomori-ken, N. Japan, situated on the Pacific coast. An important fishery centre, it is also noted for its production of chemical fertiliser and cement. Pop. 142,000.

Hachioji, industrial city of Tokyo Metropolis (Tokyo-to), 20 m. W. of central Tokyo. Traditionally noted for its silk industry, it is also a sub-centre of general merchandise, and has mechanical and chemical industries. Pop. 136,000.

Häckel, Ernst, see HAECKEL.

Hackensack, tn of New Jersey, U.S.A., and the cap. of Bergen co. It is situated on the R. H., 10 m. N. by rail of Jersey City and 14 m. NW. of New York, and is served by 4 railway lines. It is chiefly a residential tn, but in the vicinity are manufs. of pumps, metal products, glass, furniture, clothing, chemicals, paper, and food products. Pop. 22,900.

Hackenschmidt, Georges (1878-), Russian wrestler, b. Dorpat; became an engineer in St Petersburg (Leningrad) and in Germany. Won many victories on the Continent; came to England in 1901, and became famous as a wrestler on the music-hall stage. In 1908, at Chicago, he failed to conclude a match with Gutch, thus forfeiting the world's championship.

Hackert, Philipp (1737-1807), Ger. landscape painter, b. Prenzlau in Prussia. About 1768 he visited Rome, and passed the rest of his life in Italy. He was commissioned by the Empress Catherine of Russia to paint 6 pictures of Count Orlov's naval victory over the Turks in 1770. In 1786 he was appointed painter to the king of Naples, but left Naples for Florence in 1799. His paintings, the chief merit of which consists in their close imitation of nature, include 'View of Rome,' 'Views in the Vicinity of the Villa Horace,' and many seaports of Italy. See Goethe's memoir, *Philipp Hackert: Biographische Skizze*, 1811.

Hackländer, Friedrich Wilhelm von (1816-77), Ger. novelist and dramatist, b. Burtscheid, near Aachen. He served for some time in the Prussian artillery, and began his literary career with *Bilder aus dem Soldatenleben im Frieden*, 1841, followed by *Bilder aus dem Soldatenleben im Kriege*, 1849, the fruits of a campaign in Piedmont. A tour in Spain in 1854 resulted in *Ein Winter in Spanien*, 1855, and in 1857 he founded, with Zoller, the illustrated weekly *Über Land und Meer*. Among his novels the best are *Namenlose Geschichten*, 1851, *Eugen Stülfried*, 1852, *Krieg und Frieden*, 1859, and his best comedies are *Der Geheime Agent*, 1850, and *Magnetische Kuren*, 1851. See H. Morn-

ing, *Erinnerung an F. W. Hackländer*, 1878.

Hackney, metropolitan bor. of NE. London. The second element of the name shows that it was once an is. amidst the marshes of the R. Lea. The bor. is comprised of sev. old hamlets, whose names survive in the dists. within it, i.e. Clapton, Dalston, Homerton, and part of Kingsland. It was a fashionable area until the intensive industrialisation of the 19th cent., with its resulting slum conditions. Since the First World War many estate dwellings have been erected in the bor. The prin. industry is clothing. H., with Stoke Newington, returns 2 members to Parliament. The constituencies are H. Central, Stoke Newington, and H. North. Area 3287 ac.; pop. 168,600.

Hackney Breed, see HORSE.

Hackney Carriage, vehicle standing or plying for hire. The term includes trams, trolley vehicles, public service vehicles (q.v.), and taxis. In the metropolitan police dist. taxis and their drivers are licensed annually by the police; the latter also approve construction and fitness; the Home Secretary's regulations fix the fares, prescribe the conditions for granting licences, and provide for the conduct of drivers. Each H. C. must have the number of persons it is licensed to carry shown on the back of the vehicle. The relevant Acts of Parliament begin with the London Hackney Carriage Act, 1831; the Home Secretary's regulations are in the London Cab Order, 1934. There is a description of the London taxi and the licensing system in the *Report of the Inter-Departmental Committee on Cabs and Private Hire Vehicles*, 1939 (Command 5938), pub. by H.M.S.O. In other parts of England and Wales outside the metropolitan police dist., the byelaws of local authorities, usually bor. and urb. dist. councils, made under the Town Police Clauses Act, 1847, and confirmed by the Home Secretary, provide a somewhat similar form of control. See CAB.

Hackney Coach (Fr. *haquende*, an ambling horse or mare, maintained especially for the use of ladies). From the hiring-out of hackneys the word came to be associated with letting out coaches, etc., for hire. The H. C. was a conveyance with 4 wheels and 2 horses let out for hire generally after being discarded by some owner among the nobility.

Haco, see HAAKON.

Haddington, royal, municipal, and police bor. and co. tn of E. Lothian, Scotland, on the Tyne, 18 m. E. of Edinburgh. The chief building is the ruined St Mary's Church, a cruciform decorated building in red sandstone, the nave of which is sufficiently repaired to serve as par. church. Other buildings are the co. buildings (1833), the corn exchange (1854), the tn hall (1748-1831), and the Knox Memorial Institute (1880). Famous natives of the tn were John Knox, John and Samuel Brown, Samuel Smiles (1816-1904). The Eng. were besieged in the tn by the Scots in 1549. The chief indus-

tries are the manufs. of agric. implements, woollen goods, and sacking, and brewing and tanning. Pop. 5700.

Haddingtonshire, see EAST LOTHIAN.

Haddock, or *Gadus aeglefinus*, species of Gadidae, a family of marine carnivorous fishes; it is found on all coasts in the N. Atlantic Ocean, and is abundant everywhere round Great Britain. There is a strong resemblance between the H. and *G. callarias*, the cod, both having 3 dorsal and 2 anal fins of an elongated form; the H. is distinguished by a black lateral line and a black spot behind each of the pectorals. The H. is also smaller, as it never exceeds a length of 3 ft, some of the largest specimens being found in Dublin Bay. Its colouring is brown, and silvery underneath, the black markings on the pectorals sometimes extending to the middle of the back; tradition ascribes the origin of these spots to the finger and thumb of St Peter, and alleges that the H. was the fish from whose mouth he took tribute money. The H. lives largely on molluscs, and the bait used in catching it consists generally of mussels; trawlers are also employed in H. fishery. These fish are gregarious and inhabit deep waters, travelling to the coast to spawn during Mar. and April. They are sometimes cured by salting, but the usual method is to dry and smoke them; the familiar Finnan H. is so named after the fishing vil. of Finndon, Kincardineshire.

Haddon Hall, famous Eng. mansion, standing on the R. Wye, 2 m. SE. of Bakewell in Derbyshire, and 23 m. NNW. of Derby. The styles of the architecture range from Norman to the 16th and 17th cents. Before the Conquest it was the property of the Crown, but William I granted it to Wm Peveril. It has been successively in the families of Avenell, Vernon, and Mannors. It is referred to by Scott in *Peveril of the Peak*. See G. Le Blanc Smith, *Haddon, the Manor, its Hall, its Lords, and Traditions*, 1906.

Haderslev (Ger. *Hadersleben*): 1. A mt in S. Jutland, Denmark, on the Little Belt. From 1864 until the plebiscite of 1920 the dist. was part of Germany. Area 518 sq. in.; pop. 71,750.

2. Cap. of the above, seaport on the H. Fjord, an inlet communicating with the Little Belt. A considerable export trade is carried on in grain, seeds, and hides, and among the industries are iron foundries and engineering works. Pop. 18,870.

Hades, Gk name for the underworld, the place of the departed spirits or shades. It is equivalent to the Heb. *sheol*. H. was also the name of the king of the underworld, Lat. Dis or Pluto (q.v.), sometimes represented seated on a throne of sulphur from which issued the streams, Lethe, Cocytus, Phlegethon, and Acheron, which traversed the kingdom of the dead. See also PROSERPINE.

Hadfield, see GLOSSOP.

Hadhramaut. The essential H. is a valley, or rather canyon, running from W. to E. with barren hills on both sides, those on the N. sinking to the desert and those on the S. reaching to the Indian Ocean.

There are also subsidiary valleys. Modern Arab geographers restrict the name to the dist. between 48° and 51° E. It is part of the E. Aden protectorate and consists of the Quasli state of Shihir and Makalla and the Kathiri state of Seiyun. In the E. the valley bends S. and reaches the sea at Seihut, but the lower reaches are not included in H. The chief tns are Shibam, Seiyun, Jariba, and Terim. The valley has long been famous for its scholars and Terim was the scholastic centre, but Seiyun has now taken its place. Agriculture is the main occupation, with cattle-breeding and the cultivation of dates, indigo, and tobacco. In the tns the houses are of 6 or 7 storeys, presumably so as not to encroach on agric. land. The valley cannot support the pop. so many emigrate to the East Indies and Malaya. Rich families have businesses in these countries run by one of their members. Internecine strife in the valley has often made agriculture impossible. The pop. is divided into tribes, subjects, and sayyids. The sultans belong to the tribes and authority belongs to them; the subjects provide labourers and tradesmen. The sayyids (elsewhere they would be called sherifs, q.v.) are a class apart as descendants of the prophet and are greatly venerated; they do not carry arms and are often true scholars. The heads of their families are called *mansib*. The earliest hist. is that H. was sometimes independent and sometimes subject to a state in Yemen. After the Muslim conquest H. lay in a backwater and little is known about it; in more recent times it was the scene of quarrels between petty potentates. H. is the Hazarmaveth of the Bible, but Valley of Death is probably a piece of popular etymology. Incense was produced in a valley near by and to this the anc. state owed its importance. The grave of the prophet Hud is a sanctuary of great local importance, and Arab legend places the mouth of hell at Barhut. See also ARABIA. See A. von Wrede, *Reise in Hadhramanut*, 1873; L. Hirsch, *Reisen in Sudarabien*, 1897; J. T. and T. Bent, *Southern Arabia*, 1900; W. H. Ingrams, *Social, Economic, and Political Condition of the Hadhramanut*, 1936, and *Arabia and the Isles*, 1942; F. Stark, *Southern Gates of Arabia*, 1936, and *Things Seen in the Hadhramanut*, 1938.

Hading, Jane, stage name of Jeanne Alfrédine Tréfourat (1859-1944), b. Marseilles, daughter of an actor. She sang in operetta in Marseilles. She made her appearance in Paris at the Palais Royal in *La Chaste Suzanne*, and in 1883 made a great hit at the Gymnase in *Le Maître des forges*. She married the manager of the theatre, Victor Koning, in the following year, but divorced him in 1887. In 1888 she toured America with Coquelin, and on her return played at the Vaudeville in London with great success.

Hadi, pilgrimage to Mecca in the last month of the year, one of the 'pillars' of Islam (q.v.). Pilgrim dress (for a man 2 lengths of unsoiled cloth) must be worn, and is usually put on at fixed points out-

side the tn. On the evening of the seventh day a sermon is preached and then the pilgrims go to Arafat (q.v.), where they have to wait from noon to sunset on the ninth; anyone who has not done this is not a pilgrim. After sunset they return to Mecca, where the night is spent. They then go to Mina where they stone 3 pillars and offer their sacrifices, and where their heads are shaved. The tabus associated with the pilgrimage are now lifted, normal dress is resumed, and they are free to return to Mecca. The next 3 days, 11th to 13th, are spent at Mina, and each afternoon the pillars are stoned. The pilgrims return to Mecca, go outside it to put on pilgrim dress, circumambulate the Kaaba, march 7 times between Safa and Marwa, and the sacred task is finished. See R. Burton, *Personal Narrative*, 1906 (many later eds.); O. Rutter, *Triumphant Pilgrimage*, 1937.

Hadleigh, mkt tn of Suffolk, England, situated 10 m. WSW. of Ipswich, with a fine 13th-cent. church. The many old houses make H. an unusually interesting and picturesque tn. Pop. 3150.

Hadley, Henry (1871-1937), Amer. composer and conductor, studied at the New England Conservatory of Boston, became a conductor first of all, and then studied composition in Vienna in 1894-5. He was conductor of the Seattle and San Francisco Symphony Orchestras in 1909-1911 and 1911-16, and in 1929 founded the Manhattan Symphony Orchestra in New York. He wrote a number of operas, choral and symphonic works, chamber music, etc.

Hadley, John (1682-1744), mathematician and mechanician. He greatly improved the reflecting telescope, and in 1731 he invented a reflecting quadrant or sextant. His claim to the invention was disputed, a glazier in Philadelphia named Thomas Godfrey (1704-49) having invented a similar instrument, but it was satisfactorily proved that each had worked independently.

Hadley, Patrick (1899-), composer, b. Cambridge, where he studied and eventually became prof. of music in 1946 in succession to Edward J. Dent. His musical output is small but distinguished and includes incidental music for *Antigone* (Sophocles) and *Agamemnon* (Aeschylus), choral works *The Trees so High*, *The Hills*, etc., a rhapsody, *One Morning in Spring*, for small orchestra, 4 works for voice and orchestra, and a string Quartet.

Hadley, industrial suburb of Wellington, Shropshire (q.v.). Pop. 4000.

Hadow, Sir (William) Henry (1859-1937), scholar, educationist, and musician, b. Ebrington, Gloucestershire; educ. Malvern; Worcester College, Oxford. Formerly fellow, Worcester College; examiner in languages at different periods between 1900 and 1909. He occupied educational posts with troops during First World War. His *Report on the Education of the Adolescent* contains many important ideas. Hon. D.Mus., Oxford, Durham, Wales. He lectured for some time for Stainer (q.v.), prof. of music, Oxford. He was

president of the Federation of Musical Competition Festivals and of the conferences on musical education, held at Lausanne, 1929 and 1931. His *Studies in Modern Music*, 1894-5, and *Sonata Form* set a new standard in Eng. musical literature. He also ed. the *Oxford History of Music* (sev. vols., from 1901) and pub. *English Music*, 1931. His compositions include chamber music and songs.

Hadranum, see ADRANO.

Hadria, see ADRIA.

Hadrian (Publius Aelius Hadrianus) (AD 76-138), Rom. emperor, b. at Italica in Spain. In AD 85 or 86 he was placed under the guardianship of Ulpian Trajanus (afterwards the Emperor Trajan) at Rome. He held various public offices in Rome; distinguished himself in the Dacian campaigns; was *legatus praetorius* of Lower Pannonia in 103, and *legatus* in the Parthian campaign (113-17). When Trajan fell ill in the E., he formally adopted Hadrian as his successor, and left him as commander in Syria. H. was proclaimed emperor on 11 Aug. 117, and promptly proceeded to simplify the difficulties which besieged him at home and abroad by adopting a peaceful policy. He made peace with the Parthians, abandoning Mesopotamia and Assyria to them; appeased the Roxolani, who had invaded Moesia; and sent Marcus Turbo to pacify Mauritania. In 118 he hastened back to Rome to remove the unfavourable impression produced by the execution of some conspirators who had plotted his assassination. In 119 he began his celebrated travels through the empire, visiting Gaul, Germany, Britain, Spain, Mauritania, and Egypt. From 125 to 126 he was in Athens; in 130 on the Nile, where he lost his beloved Antinous (q.v.); in 134 he returned to Rome and passed the remainder of his life between the cap. and his beautiful villa at Tibur. H. was a capable and just ruler, and, except during his last illness, when he was subject to fits of violent cruelty and severity, succeeded in endearing himself to his subjects, and at the same time remaining a strict disciplinarian. He introduced various constitutional reforms at Rome, and was a patron of poets and scholars, while his magnificent buildings, especially in Athens and Rome, have been the admiration of succeeding centuries. See B. W. Henderson, *The Life and Principate of the Emperor Hadrian*, AD 76-138, 1923.

Hadrianopolis, see EDIRNE.

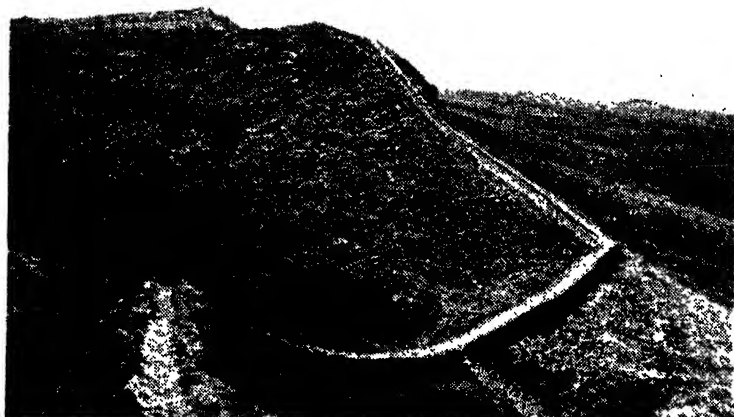
Hadrian's Villa, near Tivoli (q.v.) (the ant. Tibur), Italy, about 17 m. ENE. of Rome, a country residence of the Emperor Hadrian, a magnificent building with gardens, temples, a palace, theatres, and a stadium, all miniatures of the most celebrated places in the provs., and filled with art treasures.

Hadrian's Wall is the great N. frontier system constructed by the Romans as a continuous and permanent barrier between Tyne and Solway. It was intended as an operational base against direct attack by the Caledonians and also as a defence against barbarian infiltration

from the N. The wall was designed by the Emperor Hadrian as part of his plan for the consolidation of the empire during his visit to Britain in AD 122, but the work was largely executed by the legate Aulus Platorius Nepos, 122-6. The wall runs from Wallsend-on-Tyne to Bowness-on-Solway, a distance of just over 73 m., on a line which takes every possible advantage of natural strength; at its highest point on Winsields it climbs to 1230 ft above sea-level. It is the most powerful and certainly the most impressive of all Rom. frontier works, and the outstanding monument of the occupation of the prov. of Britain. The frontier as a whole consists of a stone and turf wall with 16 associated forts for troops of a fighting garrison; a line of fortlets at intervals of a Rom. m. (hence the accepted name of mile-castles) with signal turrets at intermediate points, both for the use of a patrolling garrison; a deep flat-bottomed ditch S. of the wall proper, known as the Vallum, which served as a civil boundary, and a road system for military communication and supplies. In its E. part, from Newcastle to the R. Irthing, the wall as originally designed was of stone, 10 Rom. ft wide and about 15 ft high to the rampart walk, some 20 ft in total height. W. of the Irthing, the wall was of turf, there being no limestone for the manuf. of mortar, 20 Rom. ft in width at the base, and about 12 ft in height to the rampart walk. In the words of the leading authority, H. W. marks the apogee of cordon control. Under the tactics of Hadrian it acted as a screen for offensive against which the enemy were penned; later modifications under Severus made it a series of strong points. The system was finally abandoned in 383 when Magnus Maximus, a military commander in Britain, revolted against Gratian and stripped Britain of its troops. Since Camden's survey in 1599 many generations of antiquaries have been attracted to the problems of the wall; a centenary pilgrimage to it took place in 1949. It has long been known that the frontier is not a simple work of uniform construction. Research in the present century, and particularly the brilliant work of recent years in which local archaeological societies have co-operated with the univ. of Durham, has revealed the stages of its hist. and the development of its design. Sev. sectors of the wall and some of its associated features, including mile-castles, turrets, bridge-abutments, a causeway across the Vallum, and the forts at Chesterholm and Hirdoswald (and at Corbridge, 2½ m. S.) are in the care of the Ministry of Works, under whose auspices first-class repair work and conservation has been undertaken. The most important sections are now subject to the protection of an official preservation scheme. At Chesters fort is the Clayton Memorial Museum with the remarkable collection of antiquities made by John Clayton (1792-1890), who preserved much of the wall from destruction and uncovered many of its structural

detalla. Housesteads fort and the adjoining stretch of wall were presented to the National Trust in 1930 by Mr J. M. Clayton; the site of the museum, built in 1935, was given by Dr G. M. Trevelyan. Further extensive collections of wall antiquities are in the Black Gate Museum, Newcastle-on-Tyne. In 1863 Dr J. Collingwood Bruce first pub. his famous *Handbook to the Roman Wall*. Prof. I. A. Richmond's ed. (reprinted 1951), with its detailed bibliography, is the present authoritative description. Further brief accounts will be found in the Ministry of Works regional *Guide to the Ancient Monuments of Northern England*, 1951. See also ROMAN BRITAIN.

phologie, 2 vols., 1866, a treatise on animal morphology in the 2 sections of tectology (structure) and promorphology. H. was one of the first to attempt to draw up a genealogical tree (*Stammbaum*) exhibiting the relationship between the various orders of animals with regard both to one another and their common origin, and his theory that the life hist. of the individual is more or less a recapitulation of its historic evolution, embodied in his *Studies on the Gastraea Theory*, 1873-84, has been generally accepted, though with some reservation in recent years. H.'s more popular works are very brilliantly written, but he is not always so careful in statement as Darwin (q.v.), while his



HADRIAN'S WALL

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Haeckel, Ernst Heinrich (1834-1919), Ger. biologist, b. Potsdam. He studied medicine and science at Würzburg, Berlin, and Vienna under Müller, Virchow, and Kölliker. He began to lecture at the univ. of Jena in 1861, and was prof. of zoology there from 1862 to 1909, with short intervals spent in travelling in search of zoological specimens. He was equally famous for his detailed zoological researches and for his generalisations on biological themes. In the former he confined himself mainly to the Invertebrata, and pub. *Die Radiolarten*, 1862; *Die Kalkschwämme*, 1872, on calcareous sponges; *Das System der Medusen*, 1879-81, on jelly fishes; and numerous smaller works, as well as his contributions to the *Challenger* reports—on *Deep-sea Medusae*, 1882, on *Siphonophora Keratosa*, 1888, and *Radiolaria*, 1889, all beautifully illustrated with superb plates which show the author's supreme skill in draughtsmanship. In the work of generalisation in biology his greatest achievement was *Generelle Mor-*

monist theories result in a materialistic tendency in his writings. His most notable treatise is *Natürliche Schöpfungsgeschichte* ('Natural History of Creation'), in which he divides the whole animal creation into 2 categories—the Protozoa, unicellular, and Metazoa, multicellular animals—the former remaining throughout their existence single-celled, while the latter were built up of innumerable cells. Of these studies the most striking outcome was the stem of the human race, in which he traced the descent of man through twenty-six stages from Monera, a simple structureless mass of protoplasm, up to the Chimpanzee, and *Pithecanthropus erectus*, remains discovered in Java, which he held to be the missing links between primitive man and the manlike apes. (See ANTHROPOLOGY.) When Darwin pub. his *Descent of Man* in 1871 he observed that H. in his *Natural History of Creation* had fully discussed man's genealogy. Darwin said that had this work appeared before his own essay he

would probably never have completed it. Darwin subsequently found that H. had confirmed almost all his conclusions on many points from a much fuller knowledge. On the controversial subject of the inheritance (see HEREDITY; WEISMANN) of acquired characters, H. agreed with Lamarck and Darwin that this was one of the most important issues in biology, and said it was an indispensable foundation of the theory of evolution. In particular, H. refers to the inheritance of rudimentary organs, which once were serviceable in our (ape-like) ancestors, but are now utterly useless or even injurious—as, for example, the appendix, the frequent disease of which is the cause of appendicitis. But this misses the point at issue. The inheritance of useless rudimentary organs is admitted: it is the inheritance of acquired characters—whether these qualities be useful or ornamental—which is denied by most modern biologists. H.'s reputation as a monistic philosopher is much less secure than his reputation as a biologist. In importing his evolutionary theories into the realms of philosophy, morals, and religion, he advanced propositions in physics which no physicist would admit and which only betray his limited acquaintance with the subject. His *Die Weltträtsel* (trans. into Eng. as *The Riddle of the Universe*), 1899, which had wide popularity among Eng. readers, contains theses on the 'monistic view of substance' which have been summarily dismissed by the spiritualist Sir Oliver Lodge (*Life and Matter*) as mere nonsense; yet H.'s book is padded with quaint theses on the fundamental forms of substance in which H. believed that he had proved that there was no immortal soul, or free will, or personal God. Even in questions of natural hist., when he attempts to philosophise, he writes with a like crudeness. Yet H. really thought his Monism a very essential part of his work. This theory of Monism was, however, by no means novel. Plotinus, Spinoza, Berkeley, Hegel, and Schopenhauer were all, each in his way, Monists. Where mer have denied mind and have denied matter, H. conjectured substance as the foundation of both—which is only materialism 'dignified with a higher title.' (Consult on this Herbert Spencer's *Synthetic Philosophy*). But while H. the monist will be forgotten, H. the naturalist will live. His *Anthropogenie* 1874 (trans. into Eng. as *The Evolution of Man*, 1879) and his *Lectures on Development and Evolution*, 1878-9, were very widely read. His other works include *Ursprung des Menschen*, 1898 (Eng. trans. *The Last Link*, 1899), *Aus Insulinde*, 1901, *Wanderbilder*, 1905, *Das Menschenproblem und die Herrentiere*, 1907, *Das Weltbild von Darwin und Lamarck*, 1909. See lives by W. Bölsche, 1900; V. Franz, 1934; and G. Wichler, 1934.

Haematemesis, vomiting of blood. The most usual cause is haemorrhage from a peptic ulcer (see under STOMACH). In severe haemorrhage the blood is bright red. When the haemorrhage is in the

nature of a slow leak, as sometimes occurs in malignant ulcers of the stomach, the blood may be partly digested before being vomited, and is dark brown in colour, giving the appearance of coffee grounds. Sometimes H. occurs from the rupture of dilated varicose-like veins at the lower end of the oesophagus. These distended veins may be associated with cirrhosis of the liver or hypertension. H. may also result from an accumulation of swallowed blood, as for instance from a nose bleed. The nose may bleed during sleep and cause H. on waking.

Treatment.—Until the bleeding has ceased, and its cause has been certainly decided upon, it is inadvisable to take anything, solid or liquid, but to remain absolutely at rest, sucking pieces of ice and spitting out the water. In this way the thirst is relieved, but care should be taken to prevent anything whatever entering the stomach. A thorough investigation of the cause is indicated.

Haematin, see HEMATIN.

Haematite, or **Hematite**, ferrous trioxide (Fe_2O_3), obtains its common name from its characteristic blood colour. It crystallises in the rhombohedral system, and is isomorphous with corundum. *Elba iron ore* or *H.* from Rio Marina often possesses a brilliant metallic lustre which may be iridescent; this particular form receives the name of *specular iron ore*, and has a hardness of 6, and sp. gr. of 5.2. H. may also exist in fibrous or granular conditions, and an impure earthy form, *red ochre*, is an economic product. The hard fibrous form from Spain is used by bookbinders, goldsmiths, and others as burnisher. In the N. of England fibrous H. often occurs in concretionary masses; it then receives the name of *kidney ore*, in recognition of its appearance on fracture. H. is widely distributed, and has been known since very remote days, having been occasionally cut and polished as an ornamental stone by the Assyrians, etc. The modern use of the mineral is as an ore of iron, and being remarkably free from phosphorus it is particularly suitable for the manuf. of steel. Analyses of certain specimens have closely approached the theoretical 70 per cent of iron for this oxide. Important mines occur in Elba, Spain, (Hilbao), and Scandinavia on the Continent. Large deposits also occur near Lake Superior. In Britain the chief supplies are in W. Cumberland and N. Lancs. Apart from the uses mentioned above, ground H. is used largely in paint manuf.

Haematoma, see BRUISE.

Haematoxylin, colouring extracted from logwood (*Haematoxylon campechianum*). Its chemical formula is $\text{C}_{16}\text{H}_8\text{O}_6$, and is in itself a crystalline substance and nearly colourless, but when combined with oxygen becomes a reddish colour, forming a substance called hematin (q.v.). H. is used, with available mordants, for dyeing, principally to produce blue and black colourings. In biology it is employed as a stain for the nucleus and chromosomes. See DYE.

Haematomes, worm parasites in the blood. See FILARIASIS; BILHARZIASIS.

Haematuria, blood in the urine. This may come from any part of the genito-urinary tract, but most commonly from the bladder or kidneys. When it is in quantity the urine will be coloured red and will often contain blood clots. Smaller quantities give a smoky colour to the urine, and when the bleeding is only in minute amounts microscopical examination or chemical tests are necessary to detect its presence. Any inflammatory lesion of the genito-urinary tract may cause H. (see NEPHRITIS; CYSTITIS). Tuberculosis (q.v.) is another cause. Renal or vesical calculi may also set up H. New growths, malignant or benign, of the kidney or bladder are a cause of painless H. The treatment consists in treating the cause.

Haemoglobin, protein occurring in the red blood-corpuscles which possesses the property of combining with oxygen and again yielding up the same when the concentration of oxygen in the tissues sinks below a certain amount (see BLOOD). H. gives a definite absorption spectrum which is quite different from that of oxyhaemoglobin (the oxygenated product). In colour it is purplish-red, whilst oxyhaemoglobin is bright red. This difference in colour may be noticed by comparing venous and arterial blood. H. also has the power of combining with carbon monoxide, giving a compound carboxy-haemoglobin, which has a much brighter red colour than oxyhaemoglobin. The poisonous character of carbon monoxide is due to this property of forming with H. a more stable compound than oxyhaemoglobin; H. is easily decomposed into a pigment hematin which contains iron, and a proteid globin which seems to belong to the group of histones. Hematin has the formula $C_{16}H_{10}N_4O_4FeOH$, and is chemically related to chlorophyll, the green colouring matter of plants. H. occurs in some invertebrates, e.g. the earthworm, the 'blood worm,' and the 'water flea' (*Daphnia*). In molluscs and crustaceans it is replaced by haemocyanin, containing copper instead of iron.

Haemolytic Disease of the Newborn, see OBSTETRICS.

Haemophilia, disease in which there is a tendency to bleed. It is characterised by excessive haemorrhage from trivial injuries and a prolonged coagulation time. H. is a rare disease affecting in Britain about one in 35,000 persons. It varies in severity but the bad haemophilic may suffer a succession of haemorrhagic emergencies from childhood onwards, any of which may be a medical problem if not a threat to life itself. Slight cuts bleed profusely and any operation, even a minor one such as tooth extraction, may result in uncontrollable haemorrhage. Internal haemorrhages into joints and body cavities are common and the patient bruises very easily. Connebruch reported in the 18th cent. that he was called to see a boy who had cut his thumb and bled to death within 2 days: a brother of the

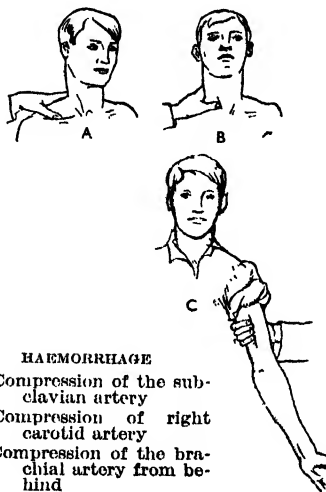
boy and sev. brothers of his mother's had d. in a similar manner. The sex-linked inheritance of this liability to bleed was thus estab. some 200 years ago and, in fact, H. is transmitted by females but exhibits itself in males only. The coagulation defect is due to the absence from the blood of a globulin, known as anti-haemophilic globulin, which is necessary to the first stage of coagulation, having some connection with the activation of thromboplastin (see THROMBIN). When normal plasma is transfused into a patient with H. normal coagulation is restored temporarily owing to the presence of the anti-haemophilic globulin in the donor plasma. Blood or plasma transfusion is of temporary benefit only in the treatment of H., however, and the benefit of it passes off in 2 to 5 days. But it may be life-saving in an emergency. Recently a highly concentrated anti-haemophilic globulin containing plasma has been prepared from animals and has been found to be effective in quantities far smaller than an equivalently potent blood transfusion. Nevertheless there is no cure for H. and all treatments are palliative. There are some rare hereditary types of bleeding disease in which there is some upset of the coagulation mechanism other than an absence of anti-haemophilic globulin and in which the hereditary transmission is different to that of H. These diseases are known as *parahaemophilia*. The nature of the missing coagulation factors are not known and they have been named factors V, VI and VII. Factor VI is also known as the Christmas factor, not from any connection with the festival but because the patient in whom its absence was first noted was named Christmas. This form of parahaemophilia is therefore known as Christmas disease.

The Ministry of Health and the Dept of Health for Scotland have issued special identity cards to haemophilics and sufferers from Christmas disease. The patient's name and blood group, and the name and address and telephone number of his doctor, are recorded on the cards. These details are to ensure that if the haemophilic is admitted to hospital for any cause the nature of the complaint will not be overlooked and also that the information necessary for carrying out a speedy transfusion is readily available. See also HEREDITY, *Types of Inheritance*.

Haemoptysis, spitting of blood, that is, haemorrhage from the lungs or air passages; a common symptom of tuberculosis. It has consequently come to be unduly feared, because looked upon as identical with consumption, whereas it may be beneficial as an indication of a condition which, when treated early, results in complete recovery and the restoration of good health. H. may also be a sign of cancer of the lung, or of pulmonary thrombosis, or of pneumonia (q.v.). The main lines of the treatment of H. are to keep the patient absolutely flat on the back, with absolute rest. Warm drinks should be avoided and all

food taken cold, or even nothing taken at all, except sucking small pieces of ice.

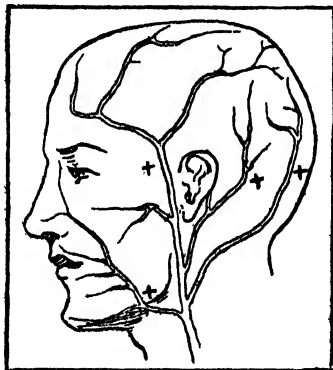
Haemorrhage, bleeding. H. may be internal or external, arterial, venous, or



HAEMORRHAGE

- A. Compression of the subclavian artery
B. Compression of right carotid artery
C. Compression of the brachial artery from behind

capillary. In arterial H. the blood spurts out in jets synchronous with the pulse beat and contraction of the heart; the blood is scarlet in colour. From a vein the blood is darker in colour and flows in a continuous steady stream. Oozing, or capillary bleeding, is intermediate in tint between the 2 former ones. It is more readily controlled than the others,



HAEMORRHAGE

+, points where arteries can be compressed in the head

though in a place where the bleeding spot cannot be reached, as in the nose, it may continue for a considerable time. The main art of the surgeon is to perform an operation with as little bleeding as possible and to control the H. in cases of injury. Thus to discuss bleeding fully would be to write a treatise on surgery. The main points, however, are to apply pressure on the bleeding spot; this is usually sufficient in a case of oozing, such as occurs in small cuts, when no large vessels are severed. In venous bleeding, the parts should be raised and pressure applied on the distal side of the wound (i.e. on the side away from the heart); H. from varicose veins, however, requires pressure on both sides of the wound. In cases of arterial bleeding pressure should be applied in the course of the artery between the wound and the heart either by digital pressure or by tourniquet (q.v.), or a bandage may be tied round the part sufficiently tightly to check the H. Styptics are used to stop H.; they include very hot or very cold water, adrenalin, pituitary extract, and fibrin foam. The cautery can also be employed.

Haemorrhoids, see PILES.

Haemus, see BALKAN MOUNTAINS.

Haesten, see HASTINGS.

Haffkine, Waldemar Mordecai Wolff (1860-1930), bacteriologist; b. Odessa, of Jewish race; became a pupil of Pasteur and held for some time the post of prof. of physiology at the Geneva medical school. From there he went to India, where he was made director-in-chief of the gov. laboratory at Bombay. He was the first to produce a vaccine for the treatment of cholera, his first inoculation being made at Agra in 1893. Four years later he introduced a fluid for inoculation against plague. He was later appointed bacteriologist to the Indian Gov.

Haffs (Dan. *hav*, sea), term applied to lagoons in the Baltic Sea. These lagoons are separated from the sea by *nehrungs*—strips of sand. The chief ones are Pommersches or Stettiner Haff, Frisches Haff (50 m. long and over 10 ft deep), and Kurisches Haff (60 m. long).

Hafiz, nom-de-plume of Khwaja Shams-ud-din Muhammad (c. 1320-r. 1389), Persian poet, one of the greatest masters of the *ghazal* (q.v.), b. Shiraz. Little is known of his life except that it was mainly spent in Shiraz under the successive patronage of Shah Isma'q of the Inju dynasty and Shah Shujā of the Muzaffarid dynasty. H.'s verses reveal an extraordinarily brilliant technical accomplishment and he expresses himself in the allegorical language of the Sufis (q.v.). The *Divan* of H., i.e. his collected *ghazals*, has been trans. Eng. translators are Sir W. Onseley, 1797-8; S. Robinson, 1875; and H. Love, 1877; E. Cowell, trans. of the Odes, 1854; Gertrude Bell, *Poems from the Divan of Hafiz*, 1887; A. J. Arberry, *Fifty Poems of Hafiz*, 1947. See H. H. Schaefer, *Goethes Erlebnis des Ostens*, 1938.

Hafnarfjörður, tn of Iceland, 8 m. S. of Reykjavik, quaintly situated on lava

slopes encircling the head of the H. fjord. Pop. 5712.

Hafnium, metallic element of symbol Hf, atomic number 72, and atomic weight 178.6. It was discovered by the Dan. chemists Coster and Hevesy, and is closely related to the element zirconium; zirconium ores almost always contain small amounts of H. compounds. The metal is obtained by passing the vapour of a specially prepared iodide over a heated tungsten filament; also by heating the fluoro-potassium compound K_2HfF_6 with sodium.

Hafstein, Hannes (1861-1922), poet and statesman, Iceland's first minister after the achievement of home rule in 1904. He was a man of rare nobility of character, and his poetry is full of freshness, beauty, and manliness.

Hag-fish, or **Borer**, name applied to all members of the Myxiniidae, marine fishes belonging to the Cyclostomata; they occur in the temperate seas of both N. and S. hemispheres. Their bodies are eel-shaped, with no lateral fins, and a slight median fin at the extremity; the head is equipped with 4 pairs of tentacles. H. attack cod, haddock, etc., rasping away all the flesh with their powerful, tooth-studded tongues, and leaving only the skeleton of their prey. Shoals of fish are often destroyed by the various species of *Myxine* which, when not seeking food, live in mud-beds at the bottom of the sea; *M. glutinosa* and other species secrete a thick glutinous slime. The species of the genus *Hepptacrus* inhabit the N. Pacific and the seas off New Zealand, South Africa, and Chile.

Hagallin, Gudmundur G. (1898-), Icelandic novelist and biographer.

Hagar, or Agar (Gen. xvi), Egyptian slave, companion and servant of Sarai, who, at the latter's wish, became the concubine of Abraham, to whom she bore a son, Ishmael. Jealousy then led Sarai, or Sarab, to drive her out into the wilderness, where she received the oracle as to the future of the Ishmaelites.

Hagberry, see BIRD CHERRY.

Hagedorn, Friedrich von (1708-54), Ger. poet, b. Hamburg, contributed satirical works to the *Hamburg Patriot*. He imitated classical, Fr., and Eng. forms, writing mainly verse tales, fables in the manner of La Fontaine, and gay songs which were in contrast to his time.

Hagen, Walter (1894-), Amer. golf champion, b. Rochester, New York. Began playing golf as a boy, early showing great aptitude for the game. Won U.S.A. open golf championship in 1914 and again in 1919. Won the Brit. open golf championship in 1922, 1924, 1928, and 1929, and the Belgian open championship in 1924, in which year he also won the professional championship, U.S.A. He won the Fr. open competition in 1930, the Australian open in 1931, and the Canadian open championship in 1934.

Hagen, Ger. tn in the *Land* of North Rhine-Westphalia (q.v.), in the Ruhr (q.v.) basin, 30 m. E.N.E. of Düsseldorf. It has been re-planned in modern style

since the end of the Second World War, and has iron and steel, and foodstuff industries. In the allied operations for the envelopment of the Ruhr (April 1945), after the main industrial tns in the N. part had been cleared, the Ger. force remaining was split in two at H. on 14 April. The E. half collapsed on 16 April, 80,000 prisoners being taken, and on 18 April the whole pocket of resistance was finally liquidated, the total of prisoners reaching 320,000 (see WESTERN FRONT IN SECOND WORLD WAR). Pop. 175,650.

Hagerstown, city and co. seat of Washington co., Maryland, U.S.A., about 86 m. by rail NW. of Baltimore. It is a trade, rail, and highway centre for NW. Maryland, in a rich agric. area. It manufs. pipe organs, aircraft, sheet-metal and foundry products, clothing, shoes, and leather goods; it also has printing and publishing plants, railroad shops, and an airport. Pop. 36,260.

Haggai (either 'born on a feast-day' or 'feast of Yahweh'), prophet contemporary with Zechariah (cf. Ezra v. 1; vi. 14), of whom little else is known. Chapter ii. 3 of his work indicates that he was already an old man when he began to prophesy, being one of those who had seen the temple 'in its former glory.' His book contains 4 short prophecies all delivered in the latter part of the second year of Darius the king (520 bc), the first three dealing with the restoration of the temple, the last being a special promise to Zerubbabel.

Haggard, Sir Henry Rider (1856-1925), novelist and writer on agriculture; b. Bradenham Hall, Norfolk. At 19 years of age he went to South Africa as secretary to Sir Henry Bulwer, governor of Natal. In 1877 he was a member of the staff of Sir Theophilus Shepstone, special commissioner for the Transvaal; and in 1878 he became master of the high court of the Transvaal. He married Miss Margitson, of Norfolk, in 1880. He took a deep interest in rural and agric. questions, being an exceedingly practical farmer and gardener on his own estate. In 1902 he pub. *Rural England*, a valuable study of rural conditions and of agriculture. In 1905 the Colonial Office commissioned him to inquire into the Salvation Army settlements in the U.S.A.—his report being pub. in 1905 as *The Poor and the Land*, with a scheme for national land settlements. *Cetewayo and his White Neighbours*, 1882, was his first book. In 1884 he pub. *Dawn*, the first of his novels. This was followed by others, most of which were very successful. The most popular are *King Solomon's Mines*, 1886, one of the best-written and most thrilling of his romances; others are *She*, 1887, *Jess*, 1887, *Allan Quatermain*, 1888, and *The World's Desire*, 1901, written with Andrew Lang. He was knighted in 1912, in recognition of his services to agriculture. *The Days of My Life*, 1926, is an autobiography.

Haggis, anct Scottish dish, called by Burns 'great chieftain o' the puddin' race.' The stomach bag of a sheep, having been well washed, turned inside out and salted,

is filled about half full (room being left for expansion, with the heart, liver, and lungs of the animal, all minced, together with a large onion, half a pound of oatmeal, a pound of suet, salt, pepper, and half a teaspoonful of mixed spice; the addition of the juice of a lemon and some good stock is often found to be an improvement. The bag is then securely sewn up and left to boil for about 3 hrs. It was common in England until the 18th cent.

Hagi, city of Yamaguchiken, Japan, situated on the Japan Sea. Samurai of H. took a prominent part in the Meiji restoration, which abolished the feudalistic rule of the Samurai class after 6 centuries. H. is now noted for its bamboo handicrafts and marmalade, and also for the scenic beauty along the coast. Pop. 58,000.

Hagiographa, *The, see BIBLE.*

Hagiology, Hagiography, the study and writing of the lives of saints and martyrs. The Acts of Martyrs are sometimes contemporary records, e.g. those of Perpetua and Felicity. The oldest collection is *The Assembly of the Ancient Martyrs* by Eusebius. The Greeks call these collections of lives of the saints *menologies*, and they can be traced from the 9th cent. In the W. Church, perhaps the most famous is the *Legenda Aurea* (Golden Legend, q.v.) of Jacobus de Voragine. The founder of critical H. was a Flem. Jesuit, Heribet Rosveyde (d. 1629), who pub. the *Vitae Patrum* (Antwerp), 1615, and arranged a systematic collection of H., resulting in the foundation of the Belgian Bollandists, who pub. the critical *Acta Sanctorum* (q.v.).

Hagonoy, tn of the prov. of Bulacan, Luzon, Philippine Is. It produces rice, Indian corn, sugar, and coffee. Pop. 37,532.

Hague, Cap de la, cape in France at the NW. extremity of the Cotentin peninsula, in the dept Manche, between Cherbourg and the is. of Alderney, on the Eng. Channel. It must be distinguished from La Hogue (q.v.). The Channel Is. are visible from Cap de la H.

Hague, The (Dutch, 's Gravenhage or Den Haag), city of the Netherlands, situated about 2 m. from the North Sea. It is the usual residence of the court, and the seat of the gov., though Amsterdam is the official cap. of the Netherlands. Many of its streets are intersected by canals, bordered with rows of trees, and in the centre of the city is the artificial lake known as Vijver. The fashionable quarter of the city lies in the N., and here the prin. buildings are to be found; the royal palace, purchased by the states in 1595; a large monument by Jacquet commemorating the jubilee of the restoration of Dutch independence in 1813; the museum, Meermanno-Westreenlanum, which contains specimens of early typography, and the royal library, which contains over 800,000 books, as well as coins and medals, antique gems, and some interesting MSS. Besides these, there are the gov. buildings situated in the Binnenhof, which was once surrounded by a

moat, and was founded in 1248 by William II, count of Holland, whose son made it his residence; the prison, where the brothers De Witt were killed by the mob in 1672; the law courts; the building containing the state archives; and the Mauritshuis, which was built in 1633-44 and contains the famous picture gallery of The H. The city, too, contains numerous churches, the Grootte Kerk of St James, which dates back to the 15th cent. and is Gothic in style; the Nieuwe Kerk, containing the tombs of the brothers De Witt and of the philosopher Spinoza, and many others. There are also a picturesque tn hall, built in 1565, and the famous royal villa 'Huis ten Bosch,' built in 1645, where the International Peace Conference was held in 1899. The H. was the bp. of the astronomer Huygens, the physician Boerhaave, and the place where Spinoza, to whom a monument has been erected, d., 1677. Here, too, the Triple Alliance between England, Sweden, and the Netherlands, 1688, was signed; The H. Convention was assembled, 1899, and 1907; and the Palace of Peace designed by Cordonnier was completed in 1913. In 1912 the International Opium Convention was signed at The H. After the First World War, in 1920, a committee of the council of the League of Nations met here to promote a permanent court of international justice. This was concluded later in the year at Geneva and has (1958) its seat at The H. The H. Academy of International Law was opened in the Palace of Peace in July 1923. The International Law Library was given by Carnegie and cost over £1,500,000. The chief industries are printing, cannon founding, copper and lead smelting, iron casting, gold and silver decorations, and the manuf. of furniture and carriages. In the Second World War the Germans bombed the city during the invasion of May 1940 and demolished the W. part of the tn. The H. suffered further damage by bombing in 1945 when the R.A.F. tried to destroy a Ger. flying bomb base. Pop. (1956) 605,350.

Hague Conference, peace conference initiated by Tsar Nicholas II in 1899, with the object of 'a possible reduction of the excessive armaments which weigh upon all nations,' to be effected by 'putting a limit to the progressive development of the present armaments.' But little was achieved in this direction either in 1899 or in 1907 (the second conference). The conference of 1899 estab. a permanent judiciary system ready to be called into action whenever 2 or more states desire a matter in difference to be settled. The convention provided for the conduct of good offices and mediation, inquiry by commissions into disputed matters of fact, the constitution of a permanent court, with an international office at The Hague. The second conference, 1907, passed an amended convention for the settlement of international disputes. Other matters discussed were the laws and customs of war, e.g. guerrilla warfare, etc., and the application to naval warfare of the

principles of the Geneva Conference. Rules, too, were made at the first conference against the throwing of missiles from balloons, the use of missiles intended to diffuse suffocating gases, and the use of expanding bullets.

Haguenau, Fr. tn, cap. of an arron., in the dept of Bas-Rhin, on the Moder, in the H. forest. It dates from the 12th cent., when the dukes of Swabia had a hunting-lodge here. In 1154 it became a tn, and in 1257 it was made a free imperial city. There was severe fighting here in the Second World War, during the battle of the Saar-Moselle-Rhine salient in spring, 1945 (see WESTERN FRONT IN SECOND WORLD WAR). H. has 2 fine old churches, dating from the 13th and 14th cents., and a number of old houses. It manufs. carpets, machinery, oil, and leather goods, and has a hop market. Pop. 17,400.

Hahn, Helen Petrovna, see BLAVATSKY.
Hahn, Otto (1879-), Ger. chemist; began studies in radioactivity under Sir Wm Ramsay, and then for a time worked with Rutherford in Montreal. In London he discovered radiothorium, an intermediate between thorium and thorium X, and in Montreal radioactinium. Returning to Berlin in 1906 he isolated mesothorium 1 in 1906, and mesothorium 2 in 1908, and from that time he continued to contribute regularly to, or to lead, advances in specialised chemical technique for pioneering work with the heavy radioactive elements. Collaborated for 30 years with Lise Meitner (1908-38), the physicist, a collaboration terminated only by the rigour of the racial laws of discrimination in Nazi Germany. During the war H. worked on the chemical side of the problem of uranium fission. While he missed the significance of nuclear isomerism he discovered the first recorded instance of this phenomenon (1921). In 1944 he was awarded the Nobel prize for chem. in recognition of his discovery (with F. Strassmann) of the neutron-induced fission of uranium and thorium.

Hahn, Reynaldo (1875-1947), Fr. conductor and composer, b. Caracas, Venezuela, studied at the Paris Conservatoire, and succeeded in having his first work pub. at the age of 14 and his first opera produced at 23. As a conductor he specialised in Mozart and as a composer he wrote much incidental music for plays, 2 ballets, operas and operettas, and a number of songs, sev. of which became favourites. He became director of the Opéra in Paris, where he d.

Hahnemann, Samuel Christian Friedrich (1755-1843), Ger. physician and founder of homoeopathy, b. Meissen, in Saxony. He studied medicine at Leipzig and Vienna, and took his degree in 1779 at Erlangen. He practised first at Dresden, then, in 1789, settled at Leipzig. He was not satisfied with the state of the science of medicine, and in 1796 advanced a new principle, 'the law of similars,' i.e. that diseases should be treated by those drugs which produce symptoms similar to them in the healthy. Four years later he

pub. his doctrine on a system of smaller doses of drugs. In 1810 his chief work was printed, *Organon der rationellen Heilkunde*, explaining this system, which he named homoeopathy. The hostility of the apothecaries forced him to leave Leipzig and find protection with the grand duke of Anhalt-Köthen. Fourteen years afterwards he went to Paris and practised homoeopathy with great success. See also MEDICINE, *Homoeopathy*. See T. L. Bradford, *Hahnemann's Life and Letters* (Philadelphia), 1895; and J. H. Clarke, *Hahnemann and Paracelsus*, 1923.

Hai Chenta in g. the prov. of Liaoning, Manchuria, 20 m. SE. of Newchwang. It was the scene of a Jap. victory over the Chinese in 1894, and over the Russians in 1904.

Hai-duong, cap. of H. prov. in Tonking (q.v.), 32 m. ESE. of Hanoi (q.v.). It is the site of an old citadel captured in 1873 by a Fr. officer, M. Balny. Formerly a thriving city of 10,000 people, it suffered heavy damage in the 1945-54 war.

Hai Yun Tau, or **Hai Yan Tao**, **Battle of**, was a battle of the Sino-Jap. war of 1894-5. It was fought on 17 Sept. 1894; the Chinese fleet was commanded by Adm. Ting, and the Japanese by Vice-Adm. Ito. The battle resulted in a Jap. victory, by which they obtained the command of the sea in that quarter.

Haida, Amer. Indian tribe of Canada and Alaska, renowned for their art and especially their totem-poles. To-day they number about 600 on is. on the S. Alaskan coast. See G. P. Murdock, *Our Primitive Contemporaries*, 1934.

Haidar Ali, see HYDER ALI.

Haiduks, see HAJDUKS.

Haifa, prin. seaport of Israel, handling three-quarters of the country's trade, situated at the foot of Mt Carmel, about 55 m. N. of Tel-Aviv. It corresponds to the classical Sycaminum, but there is nothing of archaeological interest in the present tn. As a port it was overshadowed by Acre until the beginning of the present century. Jewish immigration encouraged its development, and under the Brit. mandate communications were improved, the deep-water harbour completed in 1933, and an oil pipe-line from Kirkuk made to terminate here in 1935. Oil refineries were subsequently built and extended. A fine commercial centre was built near the harbour area, and the suburbs extended up the slopes and to the top of Mt Carmel. To the N. and E. lies the industrial area. A pleasant feature of the tn is the 'Persian Garden' of the Bahai sect on the lower slopes of Mt Carmel. Since Israel achieved independence in 1948 the pipe-line has been cut and the refining of oil curtailed. There has, however, been a notable expansion in the tonnage handled by the port and in the development of the industrial hinterland, where the prin. industries and manufs. include textiles, chemicals, soap, building materials, metal works, foundries, and vehicle assembly. The Institute of Technology has 7 faculties and about 1500 students. The

pop. consists almost entirely of Jews, the Arabs having fled in 1948, and numbers about 170,000.

Haig, Douglas, 1st Earl (1861-1928), Viscount Dawick, and 20th Laird of Bemsersyde; field-marshal; b. Edinburgh, and educ. at Clifton College and Brasenose College, Oxford, of which he was made an honorary fellow in 1915. From Oxford he entered the Royal Military College, and joined the 7th Hussars in 1885. He was a student at the Staff College, where, after gaining his 'p.s.c.' (passed Staff College), he joined the Egyptian Army. He served in the Sudan in 1898, being at Atbara and Khartoum. During the South African

the Brit. Legion (q.v.), which remains a world-wide monument to his interests in the welfare of those who fought under him.

When H. was director of staff duties at the War Office before the First World War, he brought out the first ed. of the *Field Service Regulations*. This, as well as his *Cavalry Studies*, shows the thorough grasp he had of his profession. For his eminent services during the First World War he received the thanks of Parliament, a grant of £100,000, and was raised to the peerage, taking the title of Earl Haig of Bemsersyde in the co. of Berwick. H.'s prin. role was to command for years in trench warfare and, at the most vital periods, under the supreme command of Foch. His qualities as a soldier were attacked in Lloyd George's memoirs (1934), largely on account of the grim fiasco of the battle of Passchendaele. See also FRANCE AND FLANDERS, FIRST WORLD WAR CAMPAIGN IN. For dispatches, see *Sir Douglas Haig's Despatches*, ed. by Lt.-Col. J. H. Boraston, 1919; and, for an account of his leadership, G. A. B. Dewar and J. H. Boraston, *Douglas Haig's Command*, 1922; and G. Duff Cooper, *Haig*, 1935; *Private Papers of Douglas Haig, 1914-19*, 1952; Maj.-Gen. Sir J. H. Davidson, *Haig, Master of the Field*, 1953.

Haig, Central Arabia, see JEBEL SHAMMAR.

Haig, Mary, see AVE MARIA.

Hail and Hailstorms. In old text-books hail used to be described as frozen rain, but its production is now ascribed to more complex atmospheric conditions than were then supposed. Volta suggested that when 2 clouds, charged respectively with positive and negative electricity, lie one above the other, hail is produced by electric discharges passing up and down through the moisture-laden atmosphere. More modern theories depend on the fact that condensation in the atmosphere takes place, even at temps. below freezing, mainly into 'supercooled' water droplets. If the motion in the cloud is very turbulent (this is the case in thunderstorms) an ice particle, when formed, may be carried up and down many times in different currents; it will then collect, either by coagulation with supercooled water drops or by condensation, sev. coats of ice. Near the bottom of a downward and upward journey the ice particle may pass through regions with temp. above freezing, when a layer of water forms on the particle. When again reaching freezing regions this freezes and forms clear ice; an opaque skin is formed by collision with supercooled drops and at the same time a little air is trapped. Hailstones are therefore commonly spherical, but other shapes that have been observed on rare occasions are rough prisms, 4-sided pyramids, lens-shaped disks, and rather jagged-shaped masses with projections in sev. directions. E. G. Bilham and E. F. Relf calculated the velocity of fall of spherical hail, ranging up to 60 m.p.h. for a stone 1.5 in. in diameter and to nearly 120 m.p.h. for a stone 5 in. in



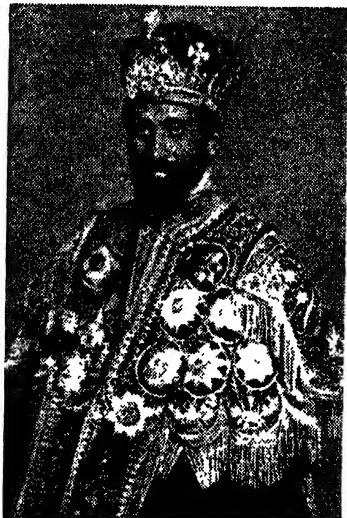
LORD HAIG

war, 1899-1902, he held important posts, was promoted lieutenant-colonel, and awarded the C.B. He commanded the 17th Lancers for a short time, but his next important post was inspector-general of cavalry in India (1903-6). He was director of military training at army H.Q. in 1906-7, and director of staff duties in 1907-9. Later he returned to India as chief of staff (1909-11), and in 1912 became general officer commanding-in-chief, Aldershot Command. When the Brit. expeditionary force went to France on the outbreak of the First World War he was in command of the 1st Army Corps, and in Dec. 1915 succeeded Sir John French as commander-in-chief. Haig's motto was 'Service—not Self,' and in accordance with this he gave himself up entirely to the service of ex-service men immediately after the conclusion of hostilities. Many organisations working on behalf of ex-service men came into existence as soon as demobilisation commenced, but H. saw that one strong body was what was needed, and by his personal efforts sev. were welded together to form

diameter and weight about 1.5 lb., which they also considered to be the theoretical maximum size. A. Wegener gives the largest known hailstone to have weighed 1 kg. (2½ lb.), but this is not considered so authentic as a stone which fell at Potter, Cheyenne Co., W. Nebraska, on 6 July 1928, which had a diameter of 5.4 in. and weighed 1½ lb. Damage during hailstorms has sometimes been very severe. Sir George Simpson quotes a storm at Kathiawar in India where, over a very large area, all the cattle (buffaloes) were wiped out by hailstorms; one of the worst storms in England occurred on 24 June 1897, in Essex, when hailstones fell in various shapes, commonly as large as hens' eggs. In July 1788 a hailstorm passed over France in 2 parallel belts, each only about 9 m. wide, one 500 m. and the other 600 m. in length. In the interval between them, 15 m. wide, rain fell in torrents.

Hailé Selassié (or **Silassie**) **I** (1891-), emperor of Ethiopia, known, prior to his coronation in 1930, as **Ras Tafari Makonnen**; son of **Ras Makonnen**, and great-nephew of **Menelik**; officially styled 'King of Kings, Conquering Lion of Judah, Elect of God, Emperor of Ethiopia.' A romantic if small figure of a man, possessing the traditional beauty of David's line, no darker than many Spaniards, clear-cut features, mobile face, short silky beard. The deposition, through his exertions, of **Lij Yasu**, in 1916, removed a menace to European interests in Africa, for that emperor, besides being dissipated, was in touch with the 'Mad Mullah' in Brit. Somaliland, and it is said that he aimed at extending his ters. to the coast so as to embrace Eritrea and the whole of Somaliland with the object of securing a European type of suzerainty; a design which could only have created international jealousies and difficulties—probably intended. But **Lij Yasu** was defeated in a barbarous campaign and, after dethronement, placed in captivity near Fische. In the spring of 1930 **H. S.** fought another campaign against **Ras Gugsa**, the divorced husband of the late Empress **Zaoditu**, and brother-in-law of Emperor **Menelik II**, **H. S.** (then **Ras Tafari**) assuming the role of rightful heir fighting a rebel. The coronation of **H. S.** at **Addis Ababa** in Nov. 1930 was an event in the evolution of Ethiopian civilisation of first-rate importance, because it was the culminating point of the domination of the Christian Church party in conjunction with the leading families of Amhara over the Muslims and pagans of S. Ethiopia. The duke of Gloucester paid a visit to the cap. during the coronation of **H. S.**, when **Ras Kaasa** acted as his host. It is said that the latter had a better title to the succession than had **H. S.**, and might with more resolution have reached the throne. Succession, however, is regulated by royal proclamation and for the most part is rarely disputed in Ethiopia. **H. S.** is essentially a social reformer, and, though nearly all Ethiopians treat their slaves well, the unequivocal and obvious

policy of his gov. is to abolish slavery. In a country where feudalism is by no means abolished, reforms are necessarily gradual. Slavery in Ethiopia is essentially domestic and cruelty by owners is severely punished. Energetic to a degree, **H. S.** also directed sev. commercial concerns in order to increase the national revenue. With his private printing press he printed part of the Scriptures and other religious literature in the vulgar tongue, so that the common people might read for themselves. The profits partially finance hospitals in the cap. In 1935 Italy overran Ethiopia and



HAILE SELASSIE I

E.N.A.

annexed the country, and **H. S.** fled to Palestine, afterwards residing in Great Britain. Early in 1941 he re-entered Ethiopia to lead his rebel troops against the Italians and to recover his throne. In this aim he received much military aid from Britain and South Africa together with considerable financial support. **H. S.** has founded sev. educational, medical, and other institutions in **Addis Ababa** and other tns of Ethiopia, and he is consistently engaged in trying to advance the Ethiopians to the standards of W. civilisation. See also ETHIOPIA. See *Christine Sandford, Ethiopia under Haile Selassie*, 1946, and *The Lion of Judah hath Prevailed*, 1955.

Halles, Lord, see DALRYMPLE.

Haileybury and Imperial Service College, public school for boys situated at Hertford Heath (2 m. S. of Hertford). Originally founded in 1806 by the East India Company as a training school for its civil

service, H. College was estab. in 1862; the I. S. College was amalgamated with it in 1942. The East India Company's school was until 1809 at Hertford Castle. See *Higgins, Old and New Hailbury*, 1887.

Hailsham, Sir Douglas McGarel Hogg 1st Viscount and Baron (1872-1950), lawyer and politician, son of Quintin Hogg, founder of the London Polytechnic, Regent Street, of which he was vice-president and vice-chairman from 1902. Educ. at Eton. First destined to a mercantile career, he studied sugar-growing in the West Indies, but turned to the Bar and politics, gaining a large practice in common law. Elected as Conservative member for Marylebone in 1922, and appointed attorney-general in the Conservative Gov. 1922-4, 1924-5. On the resignation of Lord Cave (q.v.) he became lord chancellor 1928-9, and again from 1935 to 1938. He succeeded Lord Halifax as Lord President of the Council, 1938; resigned Nov. 1938. Editor of a new ed. of Halsbury's *Laws of England*.

Hailsham, Quintin McGarel Hogg, 2nd Viscount (1907-), politician, educ. at Eton and Christ Church, Oxford. He was called to the Bar, 1932, and became a Q.C., 1953. From 1938 to 1950, when he succeeded to the title, he was M.P. (Conservative) for Oxford City, and from 1945 to 1950 was a noted Opposition speaker in the Commons. In 1956 he became first lord of the Admiralty, defending with vigour the gov.'s Suez policy, and in 1957 was appointed minister of education in the Macmillan Gov. In Sept. 1957 he became lord president of the council, and was subsequently appointed chairman of the Conservative Party organisation.

Hailsham, mkt tn in the Lewes parl. div. of Sussex, England. It possesses a fine example of Perpendicular architecture in the church of St Mary, and close by is the Augustinian priory of Michelham, with an old gatehouse and crypt. Ropes and matting are manufactured, and there is a good agric. trade. Pop. 5000.

Hainan, is. off Kwangtung prov., China, separated from the mainland by H. Strait and lying between the China Sea and the Gulf of Tonking. Area about 16,000 sq. m. The central and S. portions are traversed by granitic mts reaching an altitude of nearly 7000 ft, while the N. portion is an undulating plain, broken by isolated hills. The is. is well watered and produces timber, rice, sugar, cotton, etc. Chief tn, Kiungchow (harbour, Hoilow), on the N. coast, which was a treaty port. It was seized by the Jap. forces in Feb. 1939 ostensibly to prevent the influx, from Indo-China, of arms and munitions for the Chinese nationalist forces. Pop. estimated at about 3,000,000.

Hainaut (Flem. *Henegouwen*), prov. of Belgium, bounded on its S. side by France. Its fertile soil, its quarries, but most of all its extensive coal-fields, made it a highly industrialised centre. Iron and steel are produced in large quantities. The manuf. of glass and textile goods is

also carried on. The chief tns are Mons (the cap.), Charleroi, Tournai, and Soignies (qq.v.). The old co. of H. was united sev. times with Flanders. In 1433 it came under the rule of Burgundy; in 1477 under Austria; in 1555 under Spain. In the 17th cent. parts of it were acquired by France. It came again under Austria in 1714; was incorporated in the United Netherlands in 1815, and eventually became a Belgian prov. in 1830. Area 1436 sq. m.; pop. (1955) 1,261,125.

Hainburg, Austrian tn in the prov. of Lower Austria, on the Danube, near the Czechoslovak frontier. It is a picturesque, walled tn, and has Rom. remains (including an aqueduct) and 2 13th-cent. gates. Tobacco is manufactured. Pop. 7100.

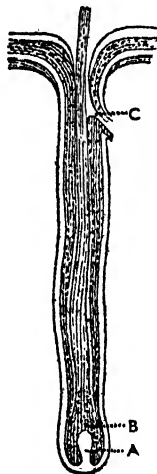
Hainichen, Ger. tn in the dist. of Karl-Marx-Stadt, 13 m. N.E. of Karl-Marx-Stadt (q.v.). It has engineering and textile industries. Gellert (q.v.) was a native. Pop. 10,000.

Haiphong, prin. seaport of Tonking (q.v.), situated on one of the branches of the Thai-binh R. about 12 m. from the Gulf of Tonking. It has rail and road communications with Hanoi (q.v.) and is linked by rail to S. China. A sandy bar prevents ships drawing more than 22 ft from entering its harbour, which is at present partially obstructed by a number of sunken wrecks. H. is also a centre of sev. industries, the prin. being cement manuf., cotton spinning, phosphate manuf., and ship repairing. In spite of heavy fighting and bombardments there in 1946, H. still has many large W.-style buildings intact, including schools, hospitals, banks, etc. All European commercial companies have now left H., and its trade has suffered a very great decline. Its pre-war pop. was 70,000; no later figures have been issued.

Hair, filamentous outgrowth from the skin, forming the coat of mammals, and corresponding to the feathers in birds. The word applies also to analogous outgrowths from insects and plants and other organisms. This article, however, is mainly concerned with human H. The human body, with the exception of the palms of the hands and the soles of the feet, is covered with short, fine H.s or down, but on the scalp and, in the case of men, on the cheeks, etc., H. tends to grow both thick and long.

Physiology of Human Hair.—A H., like a nail, is built up from the corneous cells of the epidermis. It is shut up in a bag, called a H. sac, or follicle, at the bottom of which is a papilla. The superficial epidermic cells surrounding the papilla become horny and coalesce into a shaft, which is finally thrust out above the surface skin by new growths from below. When it has reached its natural height it dies, but not before a fresh papilla and sac have been formed so as to send up another H. to replace the old one. Each H. shaft has an elaborate structure. In the centre is medullary matter, which may contain air. This is wrapped round with a cortical substance, composed of elongated

horn cells. Enveloping the latter is an outer cuticle made of flat corneous plates sitting transversely round the shaft. The cuticle in its turn is enclosed in the epidermis of the H. sac which corresponds to the integument, just as the dermis of the H. sac, which is the last coating, corresponds to the dermis of the integument. In these superficial layers of the follicle are the root-sheaths, which, as their name suggests, contain the root of the H. A fatty liquid, which lubricates the H., is secreted from the sebaceous glands, whose ducts open into the H. follicle (*see SKIN*). The



A HAIR IN ITS FOLLICLE

A, papilla; B, newest part of the hair growing on the papilla; C, mouth of a sebaceous gland

phenomenon called goose-skin, when H. stands erect, usually through alarm or horror, is produced by the involuntary contraction of tiny muscles known as the *erector pilae*.

Growth of Hair.—A crop of head H. lasts from 2 to 4 years, but normally its loss is imperceptible, as a new one has meanwhile arisen to take its place. Baldness results when the powers of renewal are unequal to the loss. It is a natural process for H. to turn grey with age, but there are many curious cases on record where, under the influence of violent emotion, like inconsolable grief or panic, H. has turned grey in a night or even in a few hrs. This misfortune is supposed to have happened to Marie Antoinette. In some families white patches, or premature blanching of the H., are hereditary. Length of H. varies very considerably. There are records of crops 6 ft long, but 2½ ft is an average length for a good growth of women's H.

Hair and Anthropology.—H. is an important anthropological criterion. There are 4 kinds, whether superficial or structural distinctions be taken into account. Most negroes have jet-black H., which is short and curly, and popularly described as woolly. The yellow races have straight, coarse, lank, and, generally speaking, the longest H. The H. of Europeans is either wavy, or glossy and smooth, the colour varying from black to very fair browns or yellows, whilst 'frizzy' H. is characteristic of the Australian aborigines, etc.

Hair Diseases are intimately related to many skin diseases, such as eczema (q.v.), and in general the condition of the H. may be said to be symptomatic of the general health. Children especially are liable to vermin in their H. (*see LICE*). If a child suffers from ringworm (q.v.), which is a highly contagious and troublesome skin disease, his H. will break off or fall out and bald circular patches be left. Constitutional weakness and many forms of debility may cause the forking, or splitting, or excessive shedding of the H. There are endless prescriptions for saving the H. and preserving it in good condition, but many of them emanate from quacks, and on the whole it is unwise to adopt any, unless recommended to do so by a properly qualified practitioner. Adults of the male sex are in particular prone to baldness (q.v.), and are often faced quite early in life with the problem how to deal with it. General diseases such as fever, or a chronic constitutional malady like tuberculosis, may give rise to it, whilst other causes are excessive perspiration, which invariably weakens the epidermis, and a decrease in the supply of blood to the scalp, which often accompanies old age. Perspiration on the head may be diminished by ventilation when under cover, and also by covering the head as little as possible; shaving 2 or 3 times in succession may promote another growth when the H. has fallen out after some serious illness, but should the misfortune be due to an eruptive disease, the patient should apply to his doctor. There is no cure for grey H.s or the baldness of old age. This section may be closed with the mention of a disease which seems endemic only in Poland. A peculiar glutinous sweat exudes and renders the H. disagreeably matted and almost euculent. One symptom is great irritation of the scalp.

Trade in Hair is very considerable in Great Britain, but it is difficult to get statistics up to date as H. is usually included with hides, etc., in all tables of imports and exports. Peasant girls of France, Belgium, and Italy sell their H. to agents especially appointed for collecting it. Auburn and golden hues fetch a much higher price than browns, because of their comparative rarity. Great Britain obtains fair H. from Scandinavia and Germany, whilst coarser kinds are imported from India and China. Wigs, artificial fronts, etc., are produced both from long tresses and combings of human H. Long

tail H. of horses is imported into this country from Russia and South America to be woven into H.-cloth. Short horse-H. is curled and freely used for stuffing chairs and sofas. The H. of cows is utilised in the manuf. of roofing and boiler felts, and also of coarse rugs and blankets: plasterers employ it to bind the mortar applied to walls of houses; and the tail H. of oxen is suitable for stuffing cushions and making barristers' wigs. Russian pigs' bristles are in great demand for toilet and decorators' brushes, whilst artists' brushes are made from camels' H. Even the tail H. of elephants has been turned to account, and is worked up into bracelets in Nyassaland.

Hairdressing has always played an important part in the personal adornment of both men and women, and has usually undergone frequent changes of design and arrangement, though some primitive peoples have kept a characteristic hairdressing for a long period and sometimes H. has been completely, or almost entirely, covered by a headdress of some kind. There seems to be no hairdressing that can be regarded as typically masculine or typically feminine: at many periods and in certain countries men have worn long H. and women have cut theirs short. The Romans considered it undignified for a man to be bald, but, until the decadence of their empire they kept their H. short-cropped, while at the same period the men of the barbarian peoples, and the Syrians, wore their H. hanging long to the shoulder. Under the Manchus Chinese men wore their H. shaved away from the forehead in front, and hanging in a long plaited 'pig-tail' behind. Among some of the Mohammedan peoples the men still follow the ancient Muslim custom of shaving their heads and leaving only one long lock on the crown of the head (covered by a fez (q.v.) or turban) by which, it was thought, they could be drawn up to heaven after their death.

Among the more curious European hairdressings have been the tall fan of curls above the forehead, worn by women of the late Rom. empire; the early 15th-cent. practice of shaving the H. away, in the case of men, from behind the ears and round the back of the neck, and in the case of women, from the forehead to almost the crown of the head; the enormous hairdressings, built over a frame, or a pad, of ladies of the third quarter of the 18th cent.; the huge 'full-bottomed' wigs of gentlemen of the late 17th cent.; and the very short-cropped H. of women in the 1920's, which, in England, was called the 'Eton Crop.' During the Middle Ages and the Renaissance, brides wore their H. hanging over their shoulders, and so, in England, did ladies of the royal family, but in the whole of the N. of Europe throughout the 15th cent. it was considered improper for other women to show any H. at all: this was never the custom in Italy, where H. was never so completely hidden. At the end of the 15th cent. men wore their H. so

long that soldiers and athletes round their heads with ribbons (see, for instance, Michelangelo's *Sistine Chapel* athletes), or held it up in a net cap. After a period of short H. in the 16th cent., from the beginning of the 17th cent. they again began to wear long H., and before the middle of the century it was worn in curls which hung onto the shoulders and were often ornamented with bows. Puritan men, in protest against extravagance in dress, cropped their H. short—hence 'Roundheads.' These fashions were superseded by the wigs mentioned above.

At least 2 rulers have been responsible for changes in fashion in hairdressing: Philip the Good, duke of Burgundy, in the middle of the 15th cent. ordered his courtiers to have their H. cut short in imitation of his own style; in the following century Francis I, king of France, after an accident which compelled him to have his H. cut close to his head, instructed his court to do the same. This fashion was soon followed at the courts in Italy, Spain, England, and France.

During the first half of the 20th cent. men wore their H. very short and considered any arrangement that called attention to the H. to be 'effeminate,' but since the end of the Second World War European men have worn slightly longer and more elaborately-shaped hairdressings. This fashion has not been followed by Amer. men.

No hairdressings worn by civilised peoples have been so fantastically conceived as those worn by some primitive tribes, who have often woven ornaments of various kinds into their H.: the Papuans, bones; Maories, sharks' teeth; Polynesians, flowers and coconut leaves. Some natives of Africa stiffen their H. by means of fat into screw-like tufts: in the New Hebrides men twist their H. into literally hundreds of fine cords.

Special instruments or machinery for cutting or waving the H. have been used by all peoples throughout hist., as well as various preparations for making the H. look glossy, or for stiffening it when once in shape. During the latter part of the 18th cent. the H. of both men and women was dusted with a white or grey powder which gave to every head an effect of uniformly grey H. 'Powder-closets' were built into houses of the period for performing this operation. H. dye, too, has been used both by civilised and primitive peoples from the earliest times. The Chinese used to colour their H. with the juice of *Hibiscus trionum*; and other vegetable dyes such as camomile, for brightening fair H., and henna (q.v.) for colouring it red, have been, and are still, used both in the E. and in the W. To-day chemical compounds, such as those involving the use of hydrogen peroxide for bleaching the H., and potassium sulphide followed by silver nitrate for dyeing it black, are also widely used in modern hairdressing. Some hair-dyes offer a serious risk to the health. In all civilised countries to-day hairdressing is

an organised calling which holds qualifying examinations and has its own trade journals. Of recent years the practice of wearing no hat has laid even more stress on the importance of carefully and decoratively dressed H.

Hair-eel, or Hair-worm, name applied to various species of Nematelminthes, and particularly to those of the genus *Gordius* (q.v.) because of their thread-like shape.

Hairs in Plants are natural outgrowths from epidermal cells. They are many in kind: root hairs are 1-celled tubes; stinging hairs, with a drop of poison on the top, are attached to the nettle genus (*Urtica*), and glandular hairs, the glands being either at tip or base, characterise the sun-dews (genus *Drosera*). Ferns have scaly hairs: bristles are merely hairs made rigid with silica, etc., and the prickles of rose-trees and brambles are hairs grown firm and woody. Externally they grow on any part of the plant, whilst in a few species they cover inner surfaces. The function of hair underground is to absorb food, i.e. water and minerals, and above ground to afford protection from frost, cold, or excessive radiation.

Haiti (Hayti), Santo (San) Domingo, or Hispaniola, negro rep. in the West Indies, occupying the W. third of the is. of Santo Domingo. Since the discovery of the is. by Columbus in 1492 there has been no continuously accepted designation for it. Columbus called it Española (Hispaniola), 'Little Spain,' whereas the native name for it was Hayti (Haiti), 'Highlands,' and after the first settlement the whole is. received the name of Santo Domingo. In 1677, when Spain ceded the W. section to France, the name H. was reserved for the W. part of the is., Santo Domingo for the E., and the whole land was known as Hispaniola. The rep. has an area of 10,204 sq. m. It is essentially a mountainous region, and the steep escarpments run right down to the shores. The highest point is Mt la Selle, 8790 ft, in the SE. Westward from the range springs the Tiburón Peninsula. The N. land mass terminates in the shorter peninsula formed by the Massif du Nord, and the 2 enclose the Golfe de la Gonave, which contains the 50-m.-long is. of the same name, among others.

There are many streams, but the only important riv. is the Artibonite, which waters the central plain and is suitable for riv. craft. H. has a coastline of 450 m., which has some good harbours. It has a wider range of climate than any other part of the Antilles, owing to the great diversity of its relief. The yearly rainfall is abundant, but is badly distributed; the uplands are constantly bathed in dense mists or heavy dews, while other dists. have hardly any rain. The mts are densely wooded, and such valuable species as rosewood, mahogany, satinwood, pines, cedars, oaks, and ironwood are found. All tropical fruits, too, arrive at perfection, the coffee shrub yielding heavy crops, and no other region is better suited for tobacco and sugar culture.

Sev. ores exist in abundance, gold, silver, copper, tin, etc., but the mines are no longer worked. H. is predominantly agric.; except for services such as electric light, automobile depots and garages, and a large-scale sugar factory there is little industry or outlet for industrial training. The chief agric. products are coffee, cotton, sisal, sugar, tobacco, pineapples, and bananas. Apart from retail trade commerce is confined to the seaports, and is largely in the hands of foreigners. The retail textile trade in particular is in the hands of Levantines, who are detested by the native ruling classes. Soap, cement, pharmaceuticals, plastics, and agric. products are manufactured, mainly near the cap.

The old constitution of H. provided for freedom of worship, trial by jury, freedom of the press, etc. H. is now governed under a constitution of 1950 which provides for a Senate (21 members) and a Chamber of Deputies (37 members). The president is elected by direct popular vote, and serves for 6 years. He is not immediately eligible for re-election. Women were enfranchised in Jan. 1957. Deputies are elected for 4 years by popular vote; senators for 6 years, 11 of them being elected by the deputies and 10 appointed by the president. The pop., which, in 1956, was estimated at 3,500,000, is almost entirely composed of negroes (with some 3000 white foreign residents) who speak a *patois* of Fr. origin known as Creole; but Fr. is the official language. Elementary education is free and compulsory, with 80,000 registered pupils, and some 93,000 in agric. schools. There are 900 at lycee standard. The chief tns are Port-au-Prince (cap. and archbishopric), with a pop. of about 170,000, Cap Haitien, Aux Cayes, Gonaives, Jacmel, and Port-de-Paix. There are small armed forces, the ground forces also acting as gendarmerie. There are regular air and steamship passenger communications with New York, Jamaica, Cuba, and the Canal Zone. There are also freight services between H. and the chief European ports, New York, gulf ports, other is. of the Antilles, the Canal Zone, and Colombia. There are about 160 m. of railways and 1800 m. of roads. Wireless telephony was estab. in 1937 between H. and Puerto Rico, Santo Domingo, New York, and Europe. A wireless broadcast station has been erected at Léogane, some 20 m. W. of the cap., and there are others privately operated.

History.—After the discovery of H. by Columbus, adventurers from Europe, drawn by the usual stories of gold, flocked to the is. and in 3 decades crushed the aborigines out of existence. Negro slaves were first brought into the is. at the beginning of the 16th cent., and in 1517 the importation of 4000 slaves annually was authorised. In 1630 a mixed colony of Fr. and Eng., who had been driven out of St Kitts (q.v.) and estab. buccaneering hide-outs on Tortuga, settled in H. At the end of the century that part of H. which they occupied was ceded to France

by the treaty of Ryswick, and named Saint Dominique by the Fr. The colony prospered until the Fr. Revolution, when the free coloured people demanded that the Fr. revolutionary principles should apply to them. This was opposed by Napoleon, and conflict ensued. In 1791 the mulattoes, disappointed at not being made Fr. citizens, sided with the negroes against the Fr. in a war which originated in a slave rising. In 1793 the abolition of slavery was proclaimed, and, the Eng. having invaded the is., Toussaint L'Ouverture, leader of the negroes, threw in his lot with the Fr., who made him commander of their forces. The Eng. were expelled in 1798, and the Fr. thus became masters of the whole is., which had been ceded to them by the treaty of Basel in 1795. Toussaint in 1801 set up a constitutional form of gov. with himself as president for life, but Bonaparte, with the intention of reintroducing slavery, dispatched a large force to the is. under his brother-in-law, Gen. Leclerc. The negroes took to the mts and a desultory war followed until Leclerc, having caajoled Toussaint into suspending hostilities and invited him to a parley, treacherously sent him to France, where he d. in prison in 1803. The infuriated negroes at once renewed the struggle under Gen. Dessalines, a former black slave who had fought under Toussaint; but on the approach of an Eng. squadron the Fr. agreed to evacuate the is., and in the next year its independence was declared, and the old name H. restored, Dessalines being made governor for life. Later that year he proclaimed himself emperor, but was assassinated in 1806, and 2 rival chiefs from Toussaint's days, Christophe and Pétion, set themselves up in the N. and S. respectively, while the Spaniards seized the E. part of the is., naming it Santo Domingo. Pétion d. in 1818, and Christophe took his own life 2 years later. Gen. Boyer was master of the is. until 1843, but was expelled by a revolution. In 1844 the people in the E. part estab. the Dominican rep.; and from that date the 2 political divs. have been maintained. In 1915 a treaty was concluded with the U.S.A. for the control of various public services by Amer. officials. In 1931 the U.S. officials in charge of public health, public works, and other services were withdrawn, while the last U.S. marines evacuated H. after an occupation of 19 years. Until 1947 the financial service was under Amer. control, there being a fiscal representative and his deputy, who were appointed by the president of H. on the nomination of the Amer. president. The Amer. control of the Haitian reserves ended officially on 1 Oct. 1947, when the Haitian Gov. redeemed the outstanding balance of the Amer. loan (1922), amounting to \$5,400,000. See J. J. Williams, *Voodooes and Obeahs*, 1933; H. P. Davis, *Black Democracy, the Story of Haiti*, 1936; J. G. Leyburn, *The Haitian People*, 1941. See also DOMINICAN REPUBLIC.

Hajdu-Bihar County, see DEBRECEN.

Hajdudorog, tn of Hungary, in Hajdu-Bihar co., 20 m. NNW. of Debrecen (q.v.). It is a centre of the Orthodox Church, and has a large trade in agric. produce. Pop. 12,000.

Hajduks, or Haiduks (perhaps from Turkish *Haidüd*, marauder), name given to a class of homeless foot-soldiers in Hungary who fought against the Turkish occupation (see HUNGARY, History); they are said to have originated in the cattle-drivers of the Alföld (q.v.). They supported the Protestants, c. 1605, and some of them were eventually ennobled and given land in the region of Debrecen (q.v.), still called *Hajduság* (Hajduks' country). H. were also found in Bulgaria and Serbia.

Hajdunánás, tn of Hungary, in Hajdu-Bihar co., 23 m. NNW. of Debrecen (q.v.). It has a trade in cereals, livestock, and tobacco. Pop. 19,000.

Hajduság, see HAJDUKS.

Haji, see HADJ.

Hakata, old seaport tn of Fukuokaken, Japan, now included in the city of Fukuoka (q.v.) which is the seat of the prefectural gov. Long noted for its excellent silk textiles, dolls, and other traditional handicrafts.

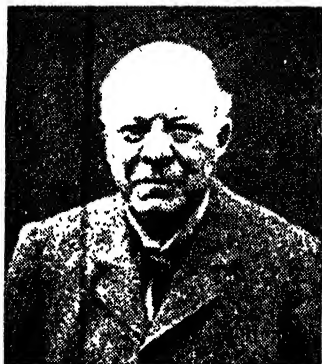
Hake, Thomas Gordon (1809-95), doctor and poet, b. Leeds. Educ. at Christ's Hospital, he studied medicine at Edinburgh and practised at Brighton. He formed a friendship with Dante Gabriel Rossetti (q.v.). Nearly all H.'s poetry was written after he was 50. Vols. of his verse include *Madelaine*, 1871, *Parables and Tales*, 1872, *Maiden Ecstasy*, 1880, and *The New Day*, 1890. *Memoirs of Eighty Years*, 1892, is autobiographical.

Hake (*Merluccius*), fish related to the cod family, which has an elongated body, 2 dorsal fins, one short and one long, and a very long anal fin. The head is flattened, and the mouth has no barbels. It varies in length from 3 to 4 ft, and has a dark grey back, but is much lighter at the sides and underneath. It is found in the Brit. seas and off the coasts of Europe, Africa, and America, and large quantities are consumed as food, the flesh being white and flaky. The spawning season is from Mar. to June, and during these months the fish keeps near the bottom and is caught by trawl-nets.

Hakkas ('guests' or 'strangers'), people of China found chiefly in Kwangtung, Fukien, and Formosa. They claim to be descended from Chinese who emigrated from the N. to the S. between the 4th and 6th cents. Their dialect retains many archaic forms of pronunciation. They are very industrious and have great intelligence, and serve as intermediaries between the Chinese and European traders and natives. At the invasion of Kublai Khan they distinguished themselves by their bravery on the Chinese side.

Hakluyt, Richard (1551 or 1552-1616), geographer, belonged to a family long settled in Herefordshire, and traceable c. 1260 under the name of Haklitol or Haklitel. Educ. at Westminster School

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Halévy, Ellis (1870-1937), Fr. historian, b. Etretat, Seine-Inférieure, son of Ludovic H. educ. in Paris, at the École Normale Supérieure and the Lycée Condorcet. In 1898 he became prof. at the École Libre des Sciences Politiques. In 1896 appeared his *La Théorie platonicienne des sciences; La Formation du radicalisme philosophique* (3 vols.), 1901-4. He is, however, best known as a student of Eng. hist. and institutions and as the author of *Histoire du peuple anglais au XIX^e siècle*, 1913, 1923 (Eng. trans. 1927, 1949).

Halévy, (Jacques François) Fromental (1799-1862), Fr. operatic composer of Jewish descent; entered Paris Conservatoire at the age of 11, and became the pupil and friend of Cherubini, by whom he was greatly influenced. After a few stillborn early works he first gained recognition with the excellent opera, *La Juive*, 1835, adding later to his reputation by *La Reine de Chypre*, 1841, and *La Tempesta*, based on Shakespeare's *The Tempest* (London), 1850. In 1854 he was appointed secretary to the Académie des Beaux-Arts. His music, which consists almost entirely of operas, is brilliant and charming, rather than great or profound. Sainte-Beuve relates that H. was a man of genial disposition and wide culture, an elegant poet, and an accomplished linguist. Bizet married his daughter and finished his last opera, *Nor, as Le Déluge*. See lives by L. Halévy, 1862, and A. Pougin, 1865.

Halévy, Joseph (1827-1908), Fr. Semitic scholar, was b. Adrianople. He wrote numerous books on Semitic, Berber, Indian, and Babylonian subjects, and for some time was prof. of Ethiopian at the École des Hautes Études in Paris. In 1868 he made a journey to N. Abyssinia to study the religion of the Jewish Falashas, and in 1869 went to Yemen in quest of Sabaeen inscriptions, collecting as many as 860. His chief works are *Mission archéologique dans le Yémen*, 1872, *Études berbères*, 1875, *Nouvel Essai sur les inscriptions proto-arabes*, 1903, *Prétendus mots assyrien en sumérien*, 1905, and *Précis d'allographie assyro-babylonienne*, 1912.

Halévy, Léon (1802-83), Fr. man of letters, brother of Fromental H., the composer. He studied law, and from 1837 to 1853 held a post in the Ministry of Education, but later devoted himself entirely to literature. He wrote *Résumé de l'histoire des Juifs*, 1827-8, *Poésies européennes*, 1837, *Recueil de fables*, 1844, *La Grèce tragique*, 1845-61; also a life of his brother, and sev. dramatic pieces.

Halévy, Ludovic (1834-1908), Fr. dramatist, b. Paris. From his early years he was connected with the stage, his father Léon H. being a dramatist. He became famous by the production of his *Orphée aux enfers*, 1858, a musical parody (a trans. of which was produced at His Majesty's Theatre, London, in 1911, by Tress). About 1860 he met Henri Meilhac, and the two collaborated,

producing operettas, farces, and comedies. Their works met with extraordinary success, both being endowed with wit, humour, and observation of character; but they owed a great part of their success to the music of Offenbach, as indeed did his *Orphée aux enfers*. The most celebrated of their libretti were *La Belle Hélène*, 1864, *Barbe-bleue*, 1866, *La Grande Duchesse de Gérolstein*, 1867, and *La Périochole*, 1868. Their attempts at more serious drama were not so successful, but *Froufrou*, 1869, made a great hit. H. also made a name as a novelist, and was elected to the Fr. Academy in 1884, his *L'Abbé Constantin*, 1882, being a great favourite. Other works of his are *Criquette*, 1883, *Mariette*, 1883, *Kari-kari*, 1892, *La Famille Cardinal*, 1907, *Deux Mariages*, 1883.

Half-blood, related through one parent only. When 2 persons are b. of the same father, but not of the same mother, they are said to have a consanguinean relation one to the other, but if they have the same mother and not the same father their relationship is said to be uterine. In the succession to real or landed property a kinsman of the H. inherited next after a kinsman of the whole blood in the same degree, and after the issue of such kinsman when the common ancestor was a male, but next after the common ancestor when such ancestor was a female. Brothers consanguinean thus inherited next after the sisters of the whole blood and their issue; and brothers uterine inherited next after the mother. But in the succession to personal property relatives of the whole and the H. were on an equal footing. Under the new law, by which the rules of succession to both real and personal property are the same, relatives of the whole blood obtain priority over those of the H.; thus, for example, if a person dies intestate, leaving surviving him brothers and sisters of the whole blood and a brother of the H., the latter is excluded altogether and the estate is distributed equally among the others (Administration of Estates Act, 1925). It may be noted that in Canada kinsmen of the H. inherit equally with those of full blood.

Half Dome, or South Dome, granite monolith of California, situated near the E. end of the Yosemite valley. It is separated from N. Dome by the canyon of the Tenaya Fork, and rises 8852 ft above the sea level.

Half-pay, allowance given in the Brit. Army (corresponding to the Fr. *demi-solde*) to commissioned officers who are not actively employed, and most commonly granted to those who have been promoted to higher rank when there is no vacancy for them. Officers, as a rule, can be put on H. at their own request or if suffering from illness, but can only continue on the list for 5 years, after which period they must resign, permanent H. having been abolished in 1884. They are then placed on 'retired pay,' and are liable to be called upon to serve in case of great emergency.

Half-tone Process, see PROCESS WORK.

Halifa, see ESPARTO GRASS.

Halifa Province, see WADI HALFA.

Halitarsus, anct tn of Boeotia, situated on a hill overlooking Lake Copais. It was burnt down by Xerxes (480 BC) and rebuilt. In 395 BC the Thebans defeated Lyander before H. It was finally destroyed in 171 BC by the Romans.

Haliburton, Thomas Chandler (1796–1865), Canadian author, b. Windsor, Nova Scotia. Called to the Bar there, he eventually rose to be chief justice in 1828. He retired in 1856, and came to England, where he resided until his death. He was the author of many books, including histories of his native prov.; but it is for his writings under the pseudonym of 'Sam Slick' that he became best known. The 3 series of *The Clockmaker, or Sayings and Doings of Sam Slick of Slickville*, 1837–40, were reprinted in England and attracted much attention. His wit was racy, and the rigour of his outspokenness was only gilded by the humorous coating under which he disguised it. There is a memoir by F. Blake Crofton, 1889.

Halibut, or **Holbut**, so called because it was probably eaten on holy days, is the name given to *Hippoglossus hippoglossus*, a species of Pleuronectidae, or flat-fish (q.v.). It has both eyes on the right side, which is brown with deeper coloured markings, the under side being white; the mouth is symmetrically placed and very capacious; the body is smooth and covered with small oval scales. The H. attains considerable size, specimens 7 or 8 ft in length being common on the coasts of North America, but the flesh of smaller fishes is more highly esteemed; these are abundant on all the Atlantic coasts, though infrequent in the Eng. Channel.

Halicarnassus, anct Gk city of Asia Minor, on the site of the modern Budrun, situated on the SW. coast of Caria on the Ceramic Gulf; bp. of Herodotus (q.v.). Originally it was built partly on the is. of Zephyria, but the latter became united to the mainland, and the city consequently was extended. It was founded by the Dorians, who settled there from Troezen, and was in 334 BC almost destroyed by the Macedonians. In 352 BC the Mausoleum—the tomb of Mausolus—was erected, which was regarded as one of the 7 wonders of the world. It consisted of a basement 142 ft by 92 ft, a pedestal, Ionic columns, a pyramid, and a chariot group.

Halicore, see DUGONG.

Haliez, see GALICIE.

Halidon Hill, hill situated 2 m. NW. of Berwick-on-Tweed, England. A battle was fought there in 1333 between the Eng. and Scots, when the latter were defeated.

Halifax, Charles Montagu, 1st Earl of (1661–1715), statesman and poet. b. Horton, Northants, and educ. at Westminster School and Trinity College, Cambridge. He helped Newton to found the Philosophical Society of Cambridge. In 1687 he wrote (with Matthew Prior) *The Country Mouse and the City Mouse* (a parody on Dryden's *Hind and Panther*),

which secured him a great reputation. In 1689 he entered Parliament as member for Maldon; in 1692 was made lord of the treasury, and commenced the national debt by raising a loan of £1,000,000. In 1694 he introduced a Bill for the incorporation of the Bank of England, and was made chancellor of the Exchequer. In 1695 he took measures to reform the currency, and in 1697 was made first lord of the Treasury. In 1698 and 1699 he acted as one of the council of regency during the king's absence from England, and in 1699 accepted the auditorship of the Exchequer. He was impeached for malpractices in 1701 and 1703, and was out of office during the reign of Queen Anne, but became first lord of the Treasury on the accession of George I. He was created earl H., 1714.

Halifax, Edward Frederik Lindley Wood, 1st Earl and 3rd Viscount, of Kirby-Underdale, Yorks (1881–), statesman, educ. at Eton and Christ Church, Oxford. From 1910 to 1925 he was Conservative M.P. for the Ripon div. of Yorks. Between 1921 and 1926, the year in which he was appointed viceroy of India and made Lord Irwin, he held successively the offices of parl. under-secretary for the colonies, president of the Board of Education, and minister of agriculture. He was created Baron Irwin, 1925. As viceroy of India he favoured the gradual development of Indian constitutional progress to dominion status. In 1929 he declared publicly in India that dominion status for India was the goal of Brit. policy in India, having, in England, previously submitted to the party leaders a statement that this was implicit in the declarations already made in India. Two years later he concluded a pact with Gandhi (q.v.). He was created knight of the Garter, 1931. After his return from India he was appointed in 1932—having in that year succeeded to the title of Viscount H.—president of the Board of Education and, from 1935, was leader of the House of Lords. He held successively the offices of war secretary, Lord Privy Seal, and Lord President of the Council. In Nov. 1937 he visited Hitler at Berchtesgaden to discuss Anglo-Ger. relations, but nothing came of the visit. On the resignation of Eden (q.v.) H. was appointed foreign secretary (1938) in the Chamberlain gov., and he held that post in Churchill's gov. until Dec. 1940, when he succeeded Lord Lothian as ambas. in Washington (a post he held until 1946). As foreign secretary it fell to him to declare Britain's foreign policy at a most critical time. After Germany had invaded Czechoslovakia, and annexed Memel, he made it clear that force would be met by force and recalled that 'history recorded many attempts to dominate Europe, all ending in disaster to those who made them.' He was made an earl in 1944. Since 1933 he has been chancellor of Oxford Univ., and chancellor of Sheffield Univ. since 1948. See A. C. Johnson, *Viscount Halifax*, 1941; and S. Hodgson, *Lord Halifax*, 1941.

fire, and the explosion destroyed all buildings in 2 sq. m. of the N. end; some 1800 persons were killed and another 4000 injured. A great blizzard on the following day added to the tragedy. H. was the largest Canadian naval base in the Second World War because of its strategic position, its large oil refinery, dockyard, and 5 marine railways. The H. shipyards repaired 7000 vessels damaged in the battle of the Atlantic, and built steel vessels.

Most of the houses are of wood, but the business section and public buildings are of stone, brick, or concrete. The cornerstone of Government House was laid in 1800, and Province House, home of the Nova Scotia legislature, was built in the reign of George III. H. Memorial Library, in memory of men killed in the armed services, was opened in 1951. St Paul's Anglican Church, the only building left from Cornwallis's time, is the oldest Protestant church building in Canada. On 2 Oct. 1758 the first legislative assembly in Canada met at H. H. is an educational and cultural centre with 8 colleges, including Dalhousie Univ., King's College, and St Mary's Univ. Angus L. Macdonald Bridge, opened in 1955, spans the upper harbour to the tn of Dartmouth. Pop. 70,500. See T. H. Raddall, *Halifax: Warden of the North*, 1948.

Halifax Law, properly known as the **Gibbet Law**, was a curious custom enacted after the estab. of the cloth trade in Halifax, Yorks, in the 15th cent. to protect trade. By H.L. the inhab. were empowered to execute anyone taken within their liberty who had stolen cloth of the value of 13*d.* or above. The accused were tried by a jury of burgesses and if found guilty were executed on a H. gibbet (an instrument similar to a guillotine) outside the tn on a market-day. The last execution took place in 1650.

Halitherium, see **DUGONG**.

Halkirk, vill. of Caithness, Scotland, on the Thurso, where flagstones are quarried and exported. Pop. 1582.

Hall, Anna Maria (*née* Fielding) (1800–1881), novelist, b. Dublin. Though she left Ireland at an early age, it gave her the motive of sex. of her successful books, such as *Sketches of Irish Character*, 1829, *Marian*, 1840, and *The White Boy*, 1845. Other works are *The Buccaneer*, 1832, and *Midsummer Eve*, 1848, a fairy tale; and many sketches in the *Art Journal*, of which her husband, Samuel Carter H. (1800–89), was editor. With him she collaborated in a work entitled *Ireland, its Scenery and Character*, 1841. She was prominent in charitable work, and assisted in the foundation of Brompton Consumption Hospital.

Hall, Basil (1788–1844), naval officer, b. Edinburgh. He entered the navy in 1802, and was present at the battle of Corunna in 1809, on board the *Endymion*. In 1816 he went to China with Lord Amherst's embassy, and described the incidents of the commission and the explorations in the E. seas, etc., in his

Account of a Voyage of Discovery to the West Coast of Corea and the Great Loo-Choo Islands, 1818. He also pub. *Extracts from a Journal written on the Coasts of Chili, Peru, and Mexico*, 1823, and *Fragments of Voyages and Travels*, 1832–4, which contains, besides the subject-matter of the title, some interesting accounts of the navy in the early part of the 19th cent. In 1842 H.'s mind gave way, and he ended his days in Haslar Hospital.

Hall, Catharine, see **HAYES**.

Hall, Charles Francis (1821–71), Amer. arctic explorer, b. Rochester, New Hampshire. He was for some time a journalist, but offered his services to the Amer. Geographic Society in 1859 to go in search of Franklin. He sailed in 1860 on board a whaler, but was ice-bound and lived among the Eskimos for 2 years. He described his experience in *Arctic Researches and Life among the Esquimaux*, 1864. He made another expedition in 1864, and was more successful, finding out some information respecting Franklin's crew. In 1871 he went on a N. Polar expedition in the *Polaris* and reached 82° 11' N. lat., until 1876 the highest point attained. He d. of an apoplectic fit during the expedition. The expedition returned in 1873 after many vicissitudes. See J. E. Nourse (editor), *Narrative of the second Arctic expedition made by C. F. Hall* (Washington), 1879; C. H. Davis (editor), *Narrative of the North Polar Expedition, U.S.S. Polaris* (Washington), 1876.

Hall, Charles Martin (1863–1914), Amer. inventor, b. Thompson, Ohio, U.S.A. He graduated from Oberlin College in 1885. While there he became interested in the chemical problem of how to procure aluminium so that it would be cheap and of wide use. Shortly after he graduated, and while still working in the Oberlin laboratory, he invented an electrolytic process which completely revolutionised commercial production of aluminium. He interested a great Pittsburgh concern in his discovery, and was made vice-president of the company. Aluminium soon became a metal universally in use, and H. made a big fortune. He bequeathed the greater portion of his millions to Amer. schools and colleges, Oberlin being the chief beneficiary.

Hall, Chester Moor (1703–71), optical inventor, b. Essex; he was a huncher of the Inner Temple in 1763. In 1733 he anticipated Dollond in the invention of the achromatic refracting telescope.

Hall, Edward (c. 1499–1547), historian, b. London; educ. at Eton and Cambridge. In 1532 he was appointed common serjeant; from 1533 to 1540 he was reader at Gray's Inn and, in the latter year, Judge of the sheriff's court. He became M.P. for Bridgnorth in 1542, and a commissioner to inquire into transgressions of the Six Articles (1541–4). But he is chiefly remembered for his *Union of the Noble and Illustre Families of Lancaster and York*, 1542, a glorification of the House of Tudor, and, especially, a justification of the actions of Henry VIII.

Commonly called *Hall's Chronicle*, it was continued after the author's death by Richard Grafton, and was prohibited by Queen Mary. Shakespeare followed it closely in some of his earlier historical plays. The earlier part of the work is unreliable, but for the early years of Henry VIII H. is a valuable authority on account of the information he gives on the social life and public opinion of the times, though his Protestant prejudice is obvious throughout. His descriptions of court festivities are striking and detailed.

Hall, Sir E. M., see MARSHALL-HALL.

Hall, Joseph (1574-1656), bishop and satirist, b. Ashby-de-la-Zouch, Leics. He was educ. at Emmanuel College, Cambridge, and while there wrote his *Virgimarium Sex Libri* (Six Books of Stripes), 1597-8, in which he claims to be the first Eng. satirist. For this he was attacked by Marston in 1598, and the works of both were burnt in 1599. In 1608 he pub. *Characters of Virtues and Vices*, the first imitation of Theophrastus in Eng. In the same year he became chaplain to Prince Henry, in 1616 dean of Worcester, and in 1627 bishop of Exeter. His religious views corresponded with those of Charles I, but he was frequently blamed by Laud for his lenience to the Puritans. He defended the Eng. Church in *Episcopacy by Divine Right*, 1640, and *An Humble Remonstrance to the High Court of Parliament*, 1640, which later produced a reply from the Puritan divines who wrote under the name of 'Sinecymnus.' Thus began a long controversy in which Milton took part, attacking H. for his early satires. In 1641 he was trans. to Norwich, but at the end of the year was expelled from office and suffered imprisonment under the Long Parliament. When released he retired to Higham. His works were ed. by P. Wynter, 1863. See life by G. Lewis, 1886.

Hall, Marguerite Radclyffe (c. 1886-1943), novelist, b. Bournemouth. She was educ. at King's College, London, and in Germany. Her first writing was in verse. In 1924 she pub. 2 novels, *The Forge* and *The Unlit Lamp*, followed by *Adam's Breed*, 1926, which was awarded the Femina Vie Heureuse and Tait Black Memorial prizes. *The Well of Loneliness*, 1928, a sympathetic study of Lesbianism, was banned in Britain, but finally passed for pub. in America. Others of her novels are *The Master of the House*, 1932, and *The Sixth Beatitude*, 1936.

Hall, Marshall (1790-1857), physiologist, b. near Nottingham; graduated M.D. at Edinburgh in 1812. He practised at Nottingham (1817-25), and in London (1826-53). His speciality was nervous diseases, and his main contributions to medical science are his discovery of reflex action, his rational treatment of epilepsy, and his introduction of methods of resuscitation in asphyxia and drowning. He pub. numerous medical and scientific works. See memoir by Mrs C. Hall, 1861.

Hall, Owen (c. 1848-1907), pen-name of **James Davis**, Brit. dramatic author. He practised as a solicitor from 1874 to 1886.

He became famous as a writer of musical comedy, his chief plays being *An Artist's Model*, 1895, *A Gaiety Girl*, 1896, *The Geisha*, 1896, *Florodora*, 1899, *A Greek Slave*, 1901, *The Silver Slipper*, 1901, and *The Girl from Kay's*, 1903.

Hall, Robert (1764-1831), Baptist minister, b. Arnesby, Leicestershire; educ. at Bristol and Aberdeen. In 1791 he succeeded Robert Robinson at the Baptist church in Cambridge. In 1807 he took charge of Harvey Lane church, Leicester, remaining there till 1826, when he returned to Bristol. His pub. sermons and other works had a wide influence.

Hall, in architecture, originally the chief room or 'great hall' of a large medieval house, in which the owner, his family, and his servants lived, fed, and even slept until the introduction of bedrooms. The term thus came to be applied to any large country-house containing such a H. From the 16th cent. onwards, the H. in Eng. houses became a central vestibule from which the various rooms opened. It usually contained the staircase, and was often surrounded by a gallery to provide access to the rooms upstairs.

In medieval Oxford and Cambridge, the hostels for students were known as H.s until the name 'college' was introduced; thereafter the name H. was used for the prin. dining and assembly room of each college; as also for the chief rooms of each of the City Guilds and Inns of Court in London, which still possess large and richly decorated H.s, including the famous Guildhall in the City.

Later still, the term was applied to other buildings used for public assembly, etc.: e.g. 'town hall,' 'music hall,' 'concert hall.'

Hall of Fame, building in the grounds of New York Univ., opened in 1900 to commemorate great achievements of Americans. It has a colonnade containing 150 panels for bronze tablets bearing the name of the person, dates of birth and death, and particulars of works. It was at first the intention to select 50 names and 5 every 5 years so that all the panels would be filled by the year 2000; but from the beginning the number of names has fallen short of the full quota.

Hall-Stevenson, John (1718-85), Brit. author. He was a friend of Laurence Sterne, and was Eugenius in the latter's *Tristram*. He wrote an imitation of *Tristram Shandy* and a continuation of *A Sentimental Journey*. His prin. book is *Crazy Tales*, 1762, a collection of clever verses, disguised, as all his writings are, by coarseness of expression and thought. He entertained at his seat, Skelton Castle, a club called The Demoniaes, of which Sterne was a member. There is an account of him in L. Melville's *Life and Letters of Sterne*, 1911.

Hallam, Arthur Henry (1811-33), poet, b. London, son of Henry H. (q.v.). He was educ. at Eton and Trinity College, Cambridge. In 1829 he visited Italy with his parents, and on his return wrote some excellent It. sonnets. He entered

the Inner Temple, 1832, but his health broke down, and whilst travelling on the Continent with his father he d. in Vienna. He was an intimate friend of Tennyson, who commemorated his death in *In Memoriam*. His *Remains* were pub. in 1834.

Hallam, Henry (1777-1859), historian, b. Windsor, and educ. at Eton and Oxford Univ. He was one of the first Eng. historians of importance to go to original documents for his material. He was not a brilliant writer, but he was generally impartial, and he was usually accurate. His greatest work, pub. in 1818, was *A View of the State of Europe in the Middle Ages*, and this at once gave him a recognised position and is still valued by historians. It was followed 9 years later by *The Constitutional History of England from the Accession of Henry VII to the Death of George II*, in which his strong Whig sympathies are more apparent, and which has not the detachment or accuracy of the earlier work.

Hallamshire, dist. of W. Riding, Yorks, England, which comprises the pars. of Sheffield and Ecclesfield. Its character is that of forest and moorland.

Halland, maritime dist. (län) of Gotaland, Sweden. Said to have been acquired by the Dan. hero 'Dan' in the 6th cent.; ceded to Sweden at the peace of Bromsebro, 1645. Area 1900 sq. m.; pop. 165,865.

Halle, A de la, see ADAM DE LA HALLE.

Halle, Sir Charles (1819-95), Anglo-Ger. pianist and conductor, b. Hagen in Westphalia. In 1836 he went to Paris, where he became friendly with Cherubini, Chopin, Liszt, de Musset, and George Sand, but was compelled by the 1848 revolution to leave France and came to London, where he started pianoforte recitals. He frequently performed at concerts, and in 1853 was director of the Gentlemen's Concerts in Manchester. In 1857 he started the famous H. concerts. In 1888 he married Wilma Norman-Neruda, the violinist, and toured with her in 1890 and 1891. H.'s orchestra (dating from 1857) was one of the best in England, and since H. has had among its resident conductors Hans Richter, Sir Thomas Beecham, Sir Hamilton Harty, and Sir John Barbirolli.

Hallé, Lady (Wilma Maria Francisca Norman-Neruda) (1839-1911), violinist, b. in Moravia. She rapidly became famous, appearing in the London Philharmonic concerts, as well as in France and Russia. She was married to the Swedish composer Ludvig Norman in 1864 and to Sir Charles Hallé in 1888, and in 1901 was appointed violinist to Queen Alexandra. She was remarkable for technique, and was the first of the women violinists of her time to compare with men in fullness of tone.

Halle (Fr. *Hal*), tn in the prov. of Brabant, Belgium, on the R. Senne, 10 m. SSW. of Brussels. The chief manufs. are paper, sugar, and chicory. It has a beautiful church, the Basilica of Notre-Dame, dating from the 14th cent. Pop. 18,000.

Halle: 1. Dist. (*Besirk*) of the Ger. Democratic Rep. (E. Germany), bounded on the N. by Magdeburg and Potsdam, on the E. by Leipzig, on the S. by Gera, and on the W. by Erfurt (qq.v.). Area 3496 sq. m.; pop. 2,001,000.

2. Or **Halle an der Saale**, Ger. city, cap. of the dist. of H., on the Saxonian Saale (q.v.), 95 m. SW. of Berlin (q.v.). It is of Frankish origin, and was given to the archbishops of Magdeburg by Otho I (q.v.). It belonged to the Hanseatic League (q.v.), 1281-1478, and passed to Brandenburg (q.v.) in 1648. It has a cathedral (15th cent.), and a ruined castle. Its univ. (1694) was, for some time, a stronghold of the Pietists (q.v.); it was incorporated in 1817 with the univ. of Wittenberg. H. is the centre of a lignite- and potash-mining dist., and has engineering, sugar, paper, chemical, and brewing industries. Its saline springs have been known since ant. times. Handel (q.v.) was a native. Pop. 290,000.

Halleck, Fitz-Greene (1790-1867), Amer. poet, b. Guildford, Connecticut. He became a clerk in New York, and in 1832 secretary to John Jacob Astor, who left him an annuity, upon which he retired in 1849. His first poems which attracted attention appeared in 1818-19 in the New York *Evening Post*, over the signature of 'Croaker & Co.', designating himself and J. R. Blake. His work includes *Fanny*, 1820, a satire upon contemporary literature, fashions, and politics, and *Marco Bozzaris*, 1825. His complete works appeared in 1868-9, ed. by J. G. Wilson.

Halleck, Henry Wager (1815-72), Amer. general, b. Westerville, New York. From 1841 to 1846 he was employed on the defence works at New York, and in 1845 visited the prin. military establs. in Europe. On his return he gave lectures on the science of war, publishing them under the title of *Elements of Military Art and Science*. He served in Mexico in 1846, and in 1849 helped to frame the state constitution of California. He resigned from the army in 1854 but returned to service at the outbreak of Civil war. In 1862 he was made commander-in-chief of the Federal forces, but was later superseded by Grant (q.v.). H. then became chief of staff. He wrote *The Mining Laws of Spain and Mexico*, 1859, and *International Law*, 1861, etc. See Lt. N. R. Phelps, *Stanton and Halleck in the Civil War*, 1905.

Hallein, Austrian tn in the prov. of Salzburg, on the Salzach. It is a tourist resort, has a salt mine (worked since the Bronze Age), and marble, paper, and rayon industries. Pop. 13,400.

Hallelujah, Alleluia, a Heb. word meaning 'Praise the Lord,' used as a doxology by Jews and Christians from very early times. Pss. 113-118 were called the great *Hallel* or Hymn of Praise, each being headed with H. They were embodied in the Jewish liturgy for the great festivals. At the Paschal meal Pss. 113-114 v. 8 were sung before, Pss. 114 v. 9-118 after, the supper. If the Last Supper

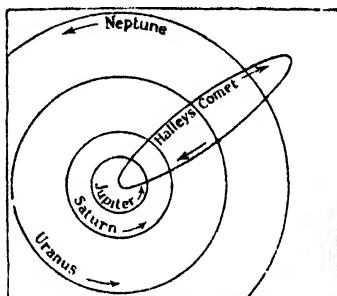
was the Paschal Feast itself, then the hymn mentioned in Mark xiv. 26 would be the latter. In the Christian liturgy of the E. and W. the H. is prominent. In the Lat. mass it is sung between the Epistle and the Gospel, and at other parts of the service at Easter. It is sung in the offices after the opening *Gloria Patri*. It is not used in the penitential seasons, as it is a song of gladness, and in the time of St Augustine was sung only from Easter to Pentecost. Later, however, it was omitted only in Advent and Lent, and on the vigils of the principal festivals. The word was kept in the Prayer Book after the first *Gloria Patri* of the daily offices in 1549; in 1552, only in trans.

Haller, Albrecht von (1708-77), Swiss anatomist, physiologist, and poet, b. Bern. He studied medicine at Tübingen and Leyden, receiving his doctor's degree at the age of 19. His poems, lyrical and didactic, among them the famous *Die Alpen*, show him to be among the regenerators of Ger. poetry. He at first practised as a physician at Bern, gaining a name for his anatomical investigations, and in 1736 he was appointed prof. of anatomy, botany, and medicine at the univ. of Göttingen, a chair which he held for 17 years. He resigned in 1753 and returned to Bern, where he wrote his *Bibliotheca medica*. H. is one of the most imposing figures in medical hist. His works on medical bibliography, the most exhaustive summary of previous writings on their subjects, form the most impressive monument of scholarship in medicine. They comprise *Bibliotheca botanica*, 1771-2, *Bibliotheca anatomica*, 1774-7, *Bibliotheca chirurgica*, 1774-5, each in 2 vols.; and the *Bibliotheca medicinarum practicae*, 4 vols., 1776-88. He also wrote *De partibus corporis humani sensibilibus et irritabilibus*, 1752, and *Elementa physiologiae corporis humani*, 9 vols., 1757-82; his collected poems appeared in 1732, and his 3 philosophical romances, *Usong* in 1771, *Alfred* in 1773, and *Fabius und Cato* in 1774. See studies by S. Lissauer, 1873, and S. d'Irsay, 1930.

Hallett, Holt S. (1845-1911), engineer and author, was employed (1860-8) in building railways through Lancs and Cheshire, and for the 12 years following (1868-80) was in the service of the public works dept in India. The Indian and Burmese railway systems were constructed largely at his suggestion and in accordance with his practical recommendations. In 1883-4 he discovered the source of the Menam and made a preliminary survey for a branch line to Bangkok. H. wrote a great deal on social and economic questions of India.

Halley, Edmund (1656-1742), astronomer and mathematician, b. Haggerston, London, and educ. at St Paul's School. In 1676 he went to St Helena to observe the S. stars, earning for himself the title of the 'Southern Tycho.' In 1682 he began his study of the moon, and the important problem of gravity, which resulted in the pub. of Newton's *Principia*, 1688-1700,

financed by H. He studied the variation of the compass in the Atlantic, and pub. his results in a *General Chart of the Variation of the Compass* in 1701. In 1703 he was made Savilian prof. of geometry at Oxford, and in 1720 succeeded Flamsteed as Astronomer-Royal, and carried out a complete observation of the moon through a period of 18 years. He is famous for having detected the 'long equality' of Jupiter and Saturn, for his method of determining the solar parallax by means of the transits of Venus, for his prediction of the return of the comet of 1682 which occurred in 1758, and his discovery of the proper motions of the fixed stars, etc. A man of remarkable versatility, H. was also a poet, and is known to have written 3 poems, all in Lat.: the first in praise of Isaac Newton, prefixed to the *Principia*.



THE PATH OF HALLEY'S COMET

which H. pub. at his own expense. His 2 other poems appeared in 1700, on his famous magnetic chart, one being in praise of Queen Anne, but now of little interest; the other lauding the unknown inventor of the compass. Another study of H. was that of geomagnetism, which in our time has been studied by Crichton Mitchell, and, prior to him, by Hellmann and Sylvanus Thompson; but the attraction of iron by the impact of loadstone was known to antiquity and is mentioned by Plato and many later writers. One remarkable gap in his geomagnetic work was his apparent total neglect of the magnetic dip, particularly in view of the importance given by Wm Gilbert to the dip in his demonstration that the earth was a great magnet. For 2 centuries H. had no comparable successor in this field and the magnetic survey of the globe was not renewed with his zeal until in 1905, the American, Louis Bauer, with the support of Andrew Carnegie, resumed the task. See *Nature*, 30 Aug. 1943. His prin. astronomical and mathematical works are *Catalogus Stellarum Austrarium*, 1679, the substance of which was incorporated in vol. iii of Flamsteed's *Historia Coelestis*, 1725; *Synopsis Astronomiae Cometicæ*, 1705; *Astronomical Tables*, 1752; and numerous miscellaneous papers in the

Philosophical Transactions. Also may be added an ed. of the *Conics* of Apollonius, with the treatise by Serenus, *De sectione cylindri et coni*, 1710, and an ed. of the *Spherics* of Menelaus, pub. posthumously, 1758. See also GROMAGNETISM.

Halley's Comet, name of the most celebrated of the periodic comets, taking its name from Edmund Halley (q.v.), who, in 1705, predicted that the comet of 1682 would return in 1758. This prediction proved true, and the comet has since returned in 1835 and 1910, its period being about 75 years, but this varies considerably owing to planetary perturbations. Halley thought that the comets of 1531 and 1607 were identical with his own, and it may be taken as practically certain that the comet of 1666, depicted on the Bayeux Tapestry, is H. C. It is also quite possible that it is the same as the comets mentioned in the Chinese records as having been seen in 87 BC and 240 BC. At aphelion H. C. is 35 times more distant from the sun than the earth is at its mean distance, and at perihelion it is less than three-fifths of the earth's mean distance from the sun—about 55 million m. (See illustration, p. 289.)

Hallgrímsson, Jónas (1807–45), Icelandic lyric poet who had a revolutionary influence upon his generation of poets and raised the thinking of his long-suffering native people to a higher level. His craftsmanship has strongly influenced all succeeding generations of Icelandic poets. His best lyrics are outstanding. He had himself been influenced by the Ger. Romantics, particularly Schiller.

Halliburton, Richard (1900–39), Amer. travel writer, b. Brownsville, Tennessee. Educ. at Princeton, he travelled all over the world, following the trails of famous heroes such as Ulysses and Byron. His books include *The Glorious Adventure*, 1927, *New Worlds to Conquer*, 1929, *The Flying Carpet*, 1932, and *Seren Leagues Boots*, 1935.

Halliburton, William Dobinson (1860–1931), physiologist, b. London. Well known to medical students for his able editing of Kirkes's *Physiology*, a standard text-book on the subject. Educ. at Univ. College School and at Univ. College Hospital. He was assistant prof. of pathology at Univ. College (1883–9) and, later, prof. of physiology at King's College. Resigned latter post in 1928, when he was made emeritus prof. Was one of those students of physiology who contributed to raising the subject, in England, from a theoretical into an experimental science, deriving much inspiration from Wm Sharpey. His own interests were directed chiefly to the chemical aspect of nervous activity, the biochemistry of muscle and nerve, and the relation between chemical physiology and pathology.

Halling, par. and vil. in Kent, England, situated on the Medway, 3½ m. SSW. of Rochester. The chief industry is connected with Portland cement. Pop. 2,500.

Halliwell—Phillipps, James Orchard (1820–89), scholar, b. Chelsea. Educ. at Jesus College, Cambridge, he was all his

life a collector of books and MSS. It was as a Shakespearian student, however, that he became eminent. His biography of Shakespeare appeared in 1848. As the result of further investigation he pub. his *New Hoke about Shakespeare and Stratford-on-Avon*, 1850. In 1863 he supplemented his previous works with his *Illustrations of the Life of Shakespeare*. He also pub. a *Dictionary of Archaic and Provincial Words*, 1846, under the name Halliwell. See memoir by G. L. Wright, 1889.

Hallmark, set of marks stamped on gold and silver wares at one of the 6 authorised Brit. assay offices to certify the fineness of the precious metal. Hallmarking was instituted in 1300 by a statute of Edward I which obliged all such wares to bear the mark of a leopard's head (the king's mark).

A H. is now composed of the following marks: (1) the standard mark, showing the standard of the metal; (2) the office mark, showing which assay office hallmarked the ware; (3) the date mark, showing the year in which the ware was hallmarked; (4) the maker's mark, consisting of the initial letters of the maker's name or style of trading.

The legal standards are: for gold 22 (916.6), 18 (750.0), 14 (583.0), and 9 (375.0) parts of fine gold in every 24 (1000.0) of metal; for silver 11 oz. 10 dwts (958.4) and 11 oz. 2 dwts (925.0) of fine silver in every 12 oz. troy (1000.0 parts).

The law requires that all gold and silver wares (with certain exceptions) be hallmarked before sale or offer for sale. The wares exempted from hallmarking are listed in the Plate (Offences) Act, 1738, the Silver Plate Act, 1790, the Wedding Rings Act, 1855, the Revenue Act, 1884, the Hallmarking of Foreign Plate Act, 1939, and the Assay of Plate (Scotland) Act, 1836.

To forge a H. or transpose a H. from one ware to another is felony punished by imprisonment. A dealer who without lawful excuse possesses or offers for sale a ware bearing a forged or transposed H. is liable to a penalty of £10. See Sir C. J. Jackson, *English Goldsmiths and Their Marks*, 1921; J. P. de Castro, *The Law and Practice of Hallmarking Gold and Silver Wares*, 1935.

Halloween, Halloweven, or All Hallowe'en, name given to 31 Oct., the eve of All Saints' Day (q.v.) or Hallowmas. It was generally believed that it was the time when supernatural influences prevailed and the ghosts of the dead were abroad. The Celtic festival of Samhain, marking the beginning of winter, was celebrated at this time. It was long observed by fireside revelries concerned with divination of the future. Hobbing for apples, in a pail of water or fastened to a hanging cross supporting lighted candles, was practised by children in Wales into the 20th cent. Hence the day was sometimes called Apple and Candle Day. See also BELTANE.

Hallowes, Odette Marie Celine (1912–). Franco-Brit. heroine, b. and educ. in

France. In 1931 she married an Englishman, and from 1942 she worked as a Brit. agent in Ger.-occupied France. She was captured by the Gestapo, tortured, and sent to Ravensbrück concentration camp. In 1945 she escaped. Her outstanding courage and endurance won her the M.H.E., 1945; G.C., 1946; and Légion d'Honneur, 1950. In 1947 she married Capt. Peter Churchill, who had also served as a Brit. agent in France. This marriage was dissolved in 1955 and in 1956 she married thirdly Geoffrey McLeod Hallowes.

Hallstatt, Austrian vil. in the prov. of Upper Austria. It is in the Salzkammergut (q.v.), and is built in terraces on a mountainside above the Hallstättersee. The H. culture of the Iron Age takes its name from the famous necropolis here (see IRON AGE). There are salt mines. Pop. 1500.

Hallström, Per (1866-), Swedish writer, a native of Stockholm. Poet, playwright, and novelist, his best works are his short stories, such as the collections *Briljantsmycket*, 1896, *Thanatos*, 1900, and *De fyra elementarna*, 1906. In spite of his humorous vein, H. ranks in literature with the idealists. It is the purity and charm of his prose which his countrymen especially single out for praise. *Selected Short Stories* were trans. by F. J. Fielden, 1922, 1933.

Hallucination (from Lat. *alucinari*, to wander in mind; (Hk *alē*, wandering), perception of an object which does not exist (as when a mental patient sees visions or hears voices which have no foundation in reality), in contradistinction to illusion, which consists in wrong interpretation of the sensory object. H. may or may not involve delusion, i.e. belief in the reality of the object falsely perceived. Sane people can recognise almost at once that their brains are playing them tricks, whereas the insane or those under the influence of hypnotism are not able to do so. H.s of all the senses occur, but those connected with sight and hearing are the most common. See INSANITY.

Halluin, Fr. tn in the dept of Nord, on the Lys, opposite Menin (q.v.). It has breweries and manufs. of textiles, bricks, oil, and rubber goods. Pop. 13,000.

Halmahera, or **Jilolo**, is. of Indonesia in the Malay Archipelago between Celebes and Ceram; has an area of 6,500 sq. m. It is very irregular and mountainous. The soil is very fertile, the climate tropical, and the chief products are dammar, sago, spices, coconuts, and fruits. The chief tns are Gelolo, Galela, and Patani. Pop. 102,000.

Halmstad, seaport at the mouth of the Nissa, on the E. shore of the Kattegat, 70 m. NW. of Christianstad, in the dist. (län) of Halland, Sweden. The chief exports are granite, timber, butter, whilst in the tn are manufactories of beer, wood-pulp, jute, and paper. Both the salmon fisheries and potato crops are profitable. Pop. 36,762.

Halmros, or Kirtsinion, tn. 18 m. SW.

E.E. 6-K*

of Volos, in the dept of Larissa, Greece. Pop. 7000.

Halo: 1. Word applied to any luminous ring, such as that sometimes seen around the sun and moon. In physical science, H.s are coloured circles which appear around the sun and less frequently about the moon. They are formed by refraction of light by ice crystals floating in the atmosphere. It is necessary to distinguish between H.s and coronae. H.s are at definite distances (22° and 46°) from the sun, and are coloured red on the inside, being due to refraction; coronae surround the sun at variable distances, and are coloured red on the outside, being due to diffraction. H.s are very common in N. regions and not rare in the Brit. climate. The H. which is most commonly seen has an angular radius of 22°. Mariotte explained the phenomenon by the existence of ice crystals in the atmosphere. Crystals of ice occur in numerous forms, but one crystalline form occurs more frequently than all others; this is the form of a hexagonal prism which may be elongated like a needle or very flat like a thin flake. Three different refracting angles are possible in a hexagonal prism. Two adjacent faces are inclined at 120°, alternate faces at 60°, and the base of the prism forms an angle of 90° with the sides. To explain the H. of 22°, suppose the air contains ice crystals distributed in all directions in space; there must occur prisms whose edges will be perpendicular to the plane drawn through the luninary and the observer's eye. The minimum deviation for a ray of light passing through a prism of ice of refracting angle 60° is exactly 22°. Therefore, since the changes of deviation are slowest near a minimum or maximum, a maximum of light will be seen in all directions making an angle of 22° with the line joining the eye and the luninary. Also, since red rays are deviated less than blue rays, the H. will be coloured red on the inside and violet on the outside. Cavendish attributed the H. of 46° to the refraction of light across faces inclined to each other at 90°. Calculation shows that for such a refraction through an ice prism the minimum deviation is 46°. Thus the formation of the H. and the order of the colours are explained just as before. The impurity of the colours in H.s is due to 2 causes: first, the superposition of the spectra produced by light coming from different points on the luninary; secondly, oblique refraction. As a rule, only the red is at all pure, a mere trace of blue or green is seen, the external portion of each H. being nearly white. See RAINBOWS.

2. Or **Nimbus**, disk or glory encircling the head of saints and holy persons in sacred art, used in the W. as a symbol of sanctity from about the 5th cent. It had a pagan origin, being known to Hindu, oriental, and classical art. In the E. it was regarded as the 'attribute of power,' figuring in Byzantine art in representations of Satan and other great powers of evil. Many Rom. emperors are represented with radiating diadems or H.s. The usual form of the nimbus is circular;

sometimes it is formed by concentric circles, or indicated by a straight line or by rays diverging from the head. A triangular or cruciform H. marked one of the 3 persons of the Trinity. A square nimbus denoted that the person represented was still living. The nimbus was usually of gold, but sometimes of other colours. After the Renaissance it became lighter, almost melting away into the picture. An illumination surrounding the whole figure was called an aureole. H.s on statues may have had their use as a protection from fouling by birds. They sometimes lay flat on the head, like that on the anet statue of St Peter in his Basilica at Rome.

Halogens, or salt-producers (Gk *hals*, salt), group of 5 non-metallic elements, viz. fluorine, chlorine, bromine, iodine, and astatine (q.v.), which have properties similar to one another but gradating in the order given above. The halides or haloids are the metallic salts of the halogen acids, and may be formed in most cases by the direct combination of the metal and the halogen.

Ha-Long, Bay of, most picturesque bay in NE. Viet Nam which is dotted with hundreds of small is. Formerly a resort of pirates, it is now famous for the beauty of its scenery. On the shore of the bay is the open-coast-coal mine of Hongay.

Halophytes, or **Saline Plants**, plants which grow naturally in soils containing much salt, on the seashore or coast, on salt steppes, or on salt marshes; having long, fleshy tap roots, sunk stomata, thick cuticle, wax and xerophytic characteristics, permitting slow intake of water. Common H. are glasswort, saltwort, sea-beet, asparagus, *Eryngium*, *Crambe*, and many plants of the Alzooaceae, Plumbaginaceae, Chenopodiaceae, and Frankeniaceae.

Hals, Dirk (c. 1591-1656), Dutch *genre* painter, younger brother of Frans H., pupil of A. Bloemaert. Examples of his work are at Amsterdam and Copenhagen. His pictures can be traced from 1624 to 1653, usually representing cavaliers, women, and young people drinking, dancing, listening to music, or talking, as in 'A Party of Ladies and Gentlemen', 'Three Musicians', and 'Two Persons Dancing'.

Hals, Frans, the Elder (c. 1580-1666), great painter of the Dutch school, b. Antwerp. In 1616 he settled at Haarlem, where his brother Dirk (q.v.) was b. and d. He was perhaps a fellow pupil of Rubens under van Noort before 1600, and on his removal to Haarlem entered the atelier of van Mander; studied under van Mander the elder. Reputed second only to Van Dyck as a portrait painter, H. was the pioneer in the Dutch school of free, broad brushwork, noted for his masterly juxtaposition of flesh-tints and portrayal of laughter and merriment (see his 'Laughing Cavalier' in the Wallace Collection, London). He worked largely in Haarlem and Delft; the Haarlem Museum, which was once an almshouse of which the painter and his wife were inmates, contains the

great groups by H. and is mainly a F. H. memorial (though there are excellent pictures by other painters whom the tn fostered). Fine works are 'St George's Guild Banquet' ('St Joris' Doelen,' 1616 and 1639), at Haarlem; 'F. Hals and Lysbeth Reyniers,' 1624; 'Hille Bobbe' in the Berlin collection, 1650; 'Regents of the Old Men's Almshouse,' 1664. The Louvre has his 'Bohémienne'; Antwerp Museum of Fine Arts his 'Dutch Nobleman'; Munich, 'Fish Girl' and 'William Croes'; the Rijks (Amsterdam), 'The



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'THE LAUGHING CAVALIER'
Painting by Frans Hals

Painter and his Wife, in a Garden'; Brussels (Palais des Beaux-Arts), 'Willem van Heythuysen'; and there are some portraits in the National Gallery, London. Sev. of his sons were minor artists. See W. von Bode, *Franz Hals und seine Schule*, 1871; D. Knackfuss, *Frans Hals*, 1896; and W. von Bode and M. Binder, *Franz Hals, sein Leben und seine Schule*, 1914.

Halsbury, Hardinge Stanley Giffard, 1st Earl of (1823-1921), lawyer and statesman; b. London; son of Dr Stanley Lees Giffard, a native of Dublin, but of Devon descent, who for a quarter of a century ed. the London *Standard*. H. was educ. at Oxford, graduating 1845. He became a barrister of the Inner Temple, 1850; Q.C., 1865; solicitor-general under Disraeli, 1875-80; M.P. (Conservative) for Launceston, 1877-85. H. was lord high chancellor of Great Britain 4 times between 1885 and 1905. He was engaged in the famous Overend and Gurney and Tichborne cases. He was created Baron H. in

1885; earl of H. and Viscount Tiverton, 1898. He was president of the Royal Society of Literature, and senior grand warden of Eng. Freemasons. He was foremost among the 'Diehards' who opposed the passing of the (1911) Parliament Bill through the House of Lords. He ed. *The Laws of England*, a compendious statement in alphabetical order of subjects, 31 vols., 1907-17. As late as 1916 he sat as a judge in the House of Lords. See J. B. Atlay, *Victorian Chancellors*, ii, 1908.

Halsingborg, see HELSINGBORG.

Halstead, or **Halsted**, mkt tn of Essex, England, on the R. Colne, 14 m. NW. of Colchester. The much restored par. church stands in the upper part of the tn and contains some fine monuments of the Bourchier family in the S. aisle. The Courtauld Homes of Rest were built in 1924. On the NW. side of the High Street is Chantry House, incorporating some remains of a college said to have been founded in 1411 by Lord Bourchier. There is a large textile factory here. In the neighbourhood is the anct tn of Castle Hedingham, with one of the finest Norman keeps in England and a large 12th-cent. church. Pop. 6219.

Halsted, William Stewart (1852-1922), Amer. surgeon, b. New York, where he was educ. and qualified in medicine in 1877. Following study abroad, he returned in 1880 to practise surgery in New York and served on the staff of 6 hospitals. In 1887 H. went to Baltimore and 2 years later was appointed prof. of surgery at Johns Hopkins Univ. there, a position he held for 32 years. He was also chief surgeon to Johns Hopkins Hospital. He was one of the greatest scientific surgeons of his time; he did much experimental work on his fundamental surgical advances before employing them in the operating theatre. To assist aseptic technique he introduced rubber gloves (1890) and other refinements; he was first to ligate the subclavian artery in its first part; he devised new operations for cancer of the breast and for hernia; he transplanted the parathyroid gland; and he was a pioneer in the use of local anaesthetics. See life by G. W. Hener, 1952.

Haltemprice, urb. dist. of the E. Riding of the co. of Yorks, England, in the Haltemprice par. div. (created in 1935). It includes Hessle (q.v.), Cottingham (q.v.), Anlaby (pop. 4000), Willerby (pop. 5500), Kirk Ella (pop. 4000), and Duns- well (pop. 500). The chief industries are horticulture on the intensive Dutch system, shipbuilding, caravan building, and the making of whiting. H. possesses 3 interesting churches. Pop. (1954) 37,000.

Northwistle, mkt tn and par. of North-umbria, England, 14 m. from Hexham. It lies in the valley of S. Tyne, with Hadrian's Rom. wall 1½ m. N., and Featherstonehaugh Castle near by. H. has a 13th-cent. church, with an earlier chancel; within the tn are the remains of 2 medieval towers. There are clay and coal industries, limestone quarries, and paint and varnish works. Pop. 7522.

Halyburton, Thomas (1674-1712), minister, b. Dupplin, near Perth. His father, one of the ejected ministers, having d. in 1682, his mother in 1685 took him to Rotterdam, where he attended the school instituted by Erasmus. On his return to Scotland in 1687 he completed his education at Perth and Edinburgh, and in 1692 entered St Andrews Univ., graduating in 1696. He became minister of Ceres, Fifeshire (c. 1700), for 11 years, and prof. of divinity at St Andrews (1710). His works, once very popular in Scotland, include *Natural Religion Insufficient, and Revealed Necessary, to Man's Happiness*, 1714, *The Great Concern of Salvation*, 1721, and *Ten Sermons* . . . 1722, which were mostly written against the deists. See his *Memoirs*, written by himself and frequently reprinted, 1714; *Works* (pub. by Dr Burns), 1835; and J. Leland, *View of Deistical Writers*, 1764.

Ham (Gen. ix. 22; x. 1, 6), one of the 3 sons of Noah, and ancestor of the Ethiopians, Egyptians, Babylonians, etc. The narrative in Gen. shows traces of much alteration, and ix. 22 may have originally have read Canaan instead of H. Noah's 3 sons would thus be Shem, Japheth, and Canaan, the div. between the 3 referring to Palestinian groups, but later extended to the surrounding nations.

Ham, Fr. tn in the dept of Somme, on the R. Somme, 12 m. from St Quentin. Its famous 15th-cent. fortress, now in ruins, held many celebrated prisoners, including Prince Louis Napoleon (afterwards Napoleon III, q.v.), who escaped from it to London in 1846 after an imprisonment of 5 years. The tn suffered damage in both World Wars. It has wire, nail, and sweet manufs. Pop. 3100.

Ham (connected with Lat. *camur*, crooked), properly the hind part or angle of the knee, usually applied to the cured thigh of hogs or sometimes of sheep or oxen. H. curing and bacon curing are important industries, performed in various ways according to the country and dist. Amer. types are usually 'green,' and York H.s are usually pale-dried. Salting and smoking are essential operations. The meat is rubbed with salt, and later with a mixture of salt, saltpetre, and sugar. Smoking is carried on in smoking-houses, the meat being hung high, and the fire kept smouldering with wood for 5 or 6 weeks. Wet salting requires 3 weeks, dry salting about 4 weeks. Beef and mutton H.s are cured largely in N. England and Dumfriesshire, Scotland; pork-curing thrives at Chicago.

Ham, East, see EAST HAM.

Ham, West, see WEST HAM.

Ham House, near Petersham, Surrey, the former 17th-cent. home of the duke of Lauderdale, a property of the National Trust leased to the Ministry of Works, notable for its historic contents (in the care of the Victoria and Albert Museum). The house was built in 1610 by Sir Thomas Vavasour, a successful lawyer, and the H-shaped Jacobean plan survives in all essentials. It stands on the S. bank of

the Thames, opposite Twickenham. Under Charles I H. H. was bought by Wm Murray, later earl of Dysart. His daughter, Elizabeth, countess of Dysart in her own right and wife of Sir Lionel Tollemache, made considerable alterations, notably the substitution of a more elaborate staircase enriched with carved panels, and baroque doorways of the type associated with John Webb. Still greater changes were made by the 2nd earl and 1st duke of Lauderdale, the virtual autocrat of Scotland from 1661 to 1679. These included suites of reception rooms on 2 floors, thereby making the S. front a continuous façade. The most important of the new rooms was that known as the Queen's Bedchamber, or Cabal Room—from the tradition that meetings of the notorious ministers (of whom Lauderdale was one) used to be held there. Another notable feature is the Long Gallery, running the length of the W. wing, lined with panelling and hung with Lely portraits. There is a wealth of walnut, lacquered, gilded, and silver furniture, with which Elizabeth filled her rooms, and the superb quality of which indicates that H. H. is the richest surviving example of the sumptuous period *décor* of the 17th cent. One of the most complete of the smaller rooms or closets is the Queen's Closet, adjoining the Cabal Room, with its rich gilt enrichments on a white marbled ground, its scagliola fire-place, and silvered chimney furniture. This unique assembly of 17th-cent. furnishings and pictures was bought by Parliament for the nation.

Hamadan, dist. and tn of Persia, 165 m. SW. of Tehran, at the base of Mt Alvand. The anc. tn was Ecbatana (q.v.). H. has an elevation of about 6000 ft. It is a trading place of considerable importance, being on the main route from Bagdad to Tehran. It has extensive bazaars and caravanserais. The chief objects of interest are the tomb of Avicenna, near the great mosque, and the reputed tomb of Esther and Mordecai, a structure of black wood. The prin. industries are carpet-weaving and tanning. It is the centre of a grain- and fruit-growing area, and stock-raising is also practised extensively. Pop. of tn 100,000.

Hamadryad, **King Cobra**, or **Giant Cobra**, one of the oriental cobras of a large and poisonous variety, found from S. India to China and the Philippines, sometimes reaching a length of 16 ft or more, and one of the longest and most venomous of snakes. It is of a yellow colour, with black crossbands; of a fierce disposition, and feeds almost wholly on other snakes.

Hamadryads, see **DRYAD**.

Hamah, see **HAMATH**.

Hamamatsu, second largest city of Shizuoka, Japan, situated on the Pacific coast, 55 m. SE. of Nagoya and 130 m. SW. of Tokyo. It is noted as the centre of a musical instrument industry. Pop. 269,000.

Haman ('Full of Grace'), see **ESTHER**; **MORDECAI**.

Hamann, Johann Georg (1730–88), Ger.

author, b. Königsberg. He lived a somewhat chequered life, trying various callings, but finally devoted himself to the study of anc. languages and oriental literature. He stressed the irrational in life, and greatly influenced Goethe and the 'Sturm und Drang.' The obscurity of his writings earned him the name *Magus des Norden*. H. wrote *Sokratische Denkwürdigkeiten*, 1760, and *Kreuzzüge des Philologen*, 1762. See R. Unger, *Hamann und die Aufklärung* (2 vols.), 1925; J. Nadler, *J. G. Hamann*, 1949.

Hamar, in Hedmark co., Norway, 59 m. from Oslo, on Lake Mjøsa, Norway's biggest lake. It is the seat of a bishopric, and is also the co. tn. It is an important railway junction. Pop. 12,000.

Hamasa, or **Hamāseh** (Arabic *hamasah*, bravery, from *hamisa*, to be firm), general term for an anthology of Arabic poetry and, more particularly, the famous collection of Arabic poetry compiled by Abu Tammam, and divided into 10 books (c. 807–46). The first (dealing with the heroes of pre-Islamic times) is the longest book, and the remaining 9 deal with various subjects. The collection is of great historical value, and is taken chiefly from extempore works.

Hamath ('fortress,' or 'enclosed place'), or **Hamah**, city situated on the banks of the Orontes, chief city of the Hittites, and cap. of the surrounding ter. In sev. places of the O.T. (e.g. Num. xxiv. 8, Judges iii. 3) it is spoken of as the N. boundary of the kingdom of Israel. It later came under the suzerainty of Solomon, on whose death it became independent. It then finally came under the dominion of Assyria, and was entirely destroyed by Sargon. It was known to the Greeks and Romans as Kipipheneia.

Hambach, Ger. vil. in the *Land of Rhineland-Palatinate* (q.v.), 47 m. S. by W. of Mainz (q.v.). A great Ger. Liberal meeting, the 'Hambacher Fest,' held here in 1832 proclaimed the 'sovereignty of the people' as the foundation of organised gov. Pop. 3000.

Hambato, see **AMBATO**.

Hambledon, agric. tn and par. of Hants, England, 10 m. N. of Portsmouth, and credited with being the bp. of cricket (q.v.) (1774), the earliest known game being played on Broadhalfpenny Down 1½ m. NE. Pop. 2300.

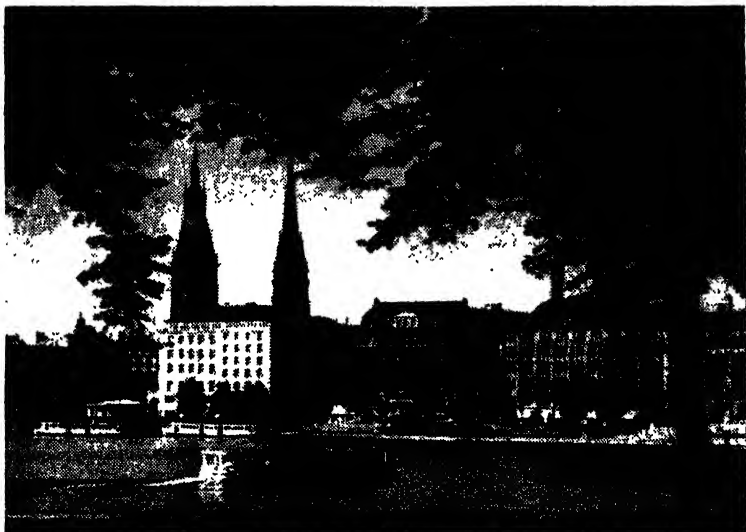
Hamborn, see **DUISBURG**.

Hamburg (**Freie und Hansestadt Hamburg**): 1. *Land* of N. Germany, in the Federal Rep. It lies between the *Länder* of Schleswig-Holstein and Lower Saxony (qq.v.), and consists of the city of H. and its environs. The boundaries coincide with those laid down in 1937–8 when the ter. of the Free Hanse Tn was reorganised, the enclave of Cuxhaven being exchanged for 3 urb. (Altona, Harburg, qq.v., and Wandsbek) and 27 rural dists. belonging to Prussia. The pop. (1950) is 78.25 per cent Protestant, 6.5 per cent Rom. Catholic, and 0.06 per cent Jewish. Total area 288 sq. m.

2. Ger. city, the largest port of the country, on the Elbe (q.v.), 64 m. from

its mouth. It is said to have been founded early in the 9th cent. by Charlemagne (q.v.). In 831 an episcopal see was estab. by the Emperor Louis I (q.v.), and in 834 the bishopric was made an archbishopric. Later, however, Ansgar (q.v.), the first occupant of the see, saw his labour nullified by Norman pirates who reduced the settlement to ashes. A large part of the original ter. of the archbishopric fell away from allegiance, and in 847 it was decided at a synod at Mainz that H. should be attached to the see of

also, there was a further influx of refugees —this time mainly political refugees from France. The Napoleonic wars caused widespread loss, both to the city itself and to its ships. After 1815 H. joined the Ger. Confederation, and its trade and importance thereafter greatly increased. In 1842 one-third of the city was destroyed in a fire, and in the same year the first railway was opened. In 1847 the H.-America Line (q.v.), thereafter the mainstay of the city's maritime trade, was founded. After 1888 the customs union



German Tourist Information Bureau

HAMBURG: THE JUNGFERNSTIEG AND THE ALSTER

Bremen (q.v.). Throughout the 10th cent. H. suffered from the incursions of the Danes and Slavs; but, despite this, Archbishop Alebrand built a cathedral in 1037 and Archbishop Adalbert (q.v.) a castle soon afterwards. During the 12th cent. H. became an important commercial centre for N. Europe, and in 1189 was granted customs exemptions by the Emperor Frederick I. In 1241 it formed a league with Lübeck (q.v.), from which alliance sprang the Hanseatic League (q.v.). During the Reformation period the city sided with Luther (q.v.), and in the 16th cent. many Dutch Protestants took refuge in it. In the 17th cent. H. took a leading part in the development of the whaling industry, and in the following century it greatly increased its trade with North America, due to the Amer. and Fr. Revolutions and the wars between England and France. In the 18th cent.,

with the Ger. Reich brought increased prosperity, and, despite a devastating cholera epidemic in 1892, the city continued to expand until the First World War. As a commercial centre it was rivalled by only London, Liverpool, Antwerp, and New York. But its general trade, as well as its tourist and emigrant traffic, declined considerably after 1914, and by the provisions of the treaty of Versailles (q.v.) H. was left with a commercial fleet consisting only of small vessels with an aggregate tonnage of 82,000. Subsequently, however, trade gradually resumed its previous level, only to be reduced to vanishing point in the Second World War. During the war the great port, especially the harbour areas, was repeatedly bombed. The early raids by the R.A.F. in 1940-1 were innocuous compared with the tremendous attacks of July-Aug. 1943. Between 24 and 29 July

there were 7 raids, and great fires raged in the port throughout the week; the air-raid warning sirens were destroyed in the first raid. The evacuation of H. was ordered, and the inhab. streamed eastward. In the Aug. raids the city's anti-aircraft guns were early silenced, and H. was hammered at will in attacks by successive fleets of 1000 and 1200 planes. In all, about 9 sq. m. of H. were devastated, and more than half of the city was destroyed. The official estimate was that 50,000 persons had been killed, and installations destroyed included shipyards, oilworks, armament and steel works, chemical and textile factories, and warehouses. After the war there lay sunken in the riv. 53 ships, 2000 barges, and 16 floating docks. The city was taken by the 7th Armoured Div. of the Brit. Second Army on 3 May 1945.

After the end of the war the reconstruction of H. began almost at once and progressed with great rapidity. New buildings have been erected in all parts of the city, many of them—in particular the commercial buildings—very fine. H. is much divided up by waterways: the Bille flows through it to join the Elbe, there are many canals, and another riv., the Alster (q.v.), has been dammed to form 2 lakes, the *Aussen Alster* and the *Binnen Alster*, which are a feature of the city and bisect it. Between the 2 basins of the Alster is the *Lombardsbrücke* (Lombards' bridge), the focal point of the city. Among the old buildings which survived the war are the Renaissance *Rathaus*, the beautiful *St-Michaëlis-Kirche*, and many fine medieval houses. Around the centre of the city there are prosperous residential and industrial suburbs; those in the *Blankenese* dist. to the SW. being particularly attractive. There is a univ. (1919), with faculties of theology, law, medicine, natural science, and philosophy (7650 students in 1955), and there are botanical gardens, good theatres, and museums. At *Fuhlsbüttel* there is a modern and large airport.

The quays are accessible to ocean-going vessels of all draughts, and the port of H. has made a remarkable recovery from the depredations of the war. The harbour basins of the Upper Elbe, used for inland shipping, are equally busy with the harbours used for sea-going trade. Much of the inland traffic is with the countries of E. Europe. H. is a free port (q.v.), and the commodities in which it chiefly trades are coal, ores, timber, oil, grain, stone, coffee, and rubber. The prin. industries are shipbuilding, oil-refining, and the manuf. of metal and rubber goods, optical and electrical equipment, food-stuffs, cigarettes, and soap. There are printing and publishing concerns, film studios, and broadcasting studios. Pop. 1,792,900. See W. Meilop, *Historische Topographie von Hamburg*, 1923; and B. Stüd-Olsen, *Hamburg, die Geschichte einer Stadt*, 1951.

Hamburg-America Line, originally called **Hamburg - Amerikanische Packetfahrt - Aktiengesellschaft**, or HAPAG, founded

1847. The *Borussia* (1856) was the first steamship to carry U.S.A. mails; and the *First Bismarck* was the first to accomplish its journey from Southampton in less than 6½ days. Under Albert Ballin (q.v.) the HAPAG made such progress that before the First World War HAPAG ships were the fastest transatlantic liners. Ballin built some of the world's largest vessels: the mammoth liners *Imperator* (1912), later known as the *Berengaria* (q.v.), of the Cunard line; the *Vaterland* (1914), later the *Leviathan* (q.v.) of U.S. Shipping Board; and the *Bismarck* (1921), later the *Majestic* (q.v.) of the White Star Line. In 1914 the HAPAG fleet consisted of 266 sea-going ships aggregating 1,360,000 gross registered tons; and no fewer than 75 regular lines were operated. By the Versailles Treaty the HAPAG surrendered entirely to the *Entente* except for a few small units. In 1920 the company re-estab. its New York service, in agreement with the Harriman concern (United Amer. Lines), with the *Cleveland* (1908), *Resolute* and *Reliance* (both 1920) of the United Amer. Lines, and the *Albert Ballin* and *Deutschland* (both 1923), *Hamburg* (1926), and *New York* (1927) of the HAPAG. Later the HAPAG amalgamated with the Ger. Australian and Kosmos lines, and in 1930 concluded an agreement for a community of interests and operations with Norddeutscher Lloyd. Before the outbreak of the Second World War the HAPAG had some 108 vessels with a gross tonnage of about 750,000; 13 sea-going ships were being built at that time. It had passenger and cargo services to North and South America, Indonesia, the Far East, Australia, Africa, and E. Mediterranean.

Reconstruction began in 1950; and at the end of 1956 the new-built HAPAG fleet consisted of 32 cargo-ships and 3 combined freight and passenger ships totalling 185,000 gross registered tons.

Hamburg-South American Line, *The*, was estab. in 1871, and at the outbreak of the First World War possessed 56 steamers, with a total tonnage of 251,000. After the war its services were suspended by losses of some vessels, and by delivery of the remainder to the Reparations Commission. Reconstruction began in 1921, and by 1927 the company had the fastest steamers plying between Europe and South America—the *Cap Arcona* (1927), 20 knots, of 27,560 tons gross register, and the *Cap Polonio* (1914), 15 knots (one of the largest steamers at that time fitted for liquid fuel), of 20,500 tons gross register. The company also built a series of motor-ships of 14,000 tons gross register, with a service speed of 14 knots, for carrying third-class passengers to and from South America and for holiday cruises.

Hamden, tn in New Haven co., Connecticut, U.S.A., 6 m. N. of New Haven. It manufs. garden implements, hardware, lighting fixtures, firearms, fishing tackle, furniture, metal and wire products, bricks, tiles, and concrete blocks; agriculture (fruit, truck farming) is also practised. Pop. c. 29,700.

Häme, co. of Finland, the surface of which is largely covered by lakes. Area 7100 sq. m.; pop. (1955) 560,000. Cap. Hämeenlinna. Tampere is the largest tn (105,800).

Hämeenlinna, cap. of the co. of Häme, Finland, 60 m. NNW. of Helsinki. Its castle, dating from the Middle Ages, was formerly used as a prison. From H. tourists begin waterway trips on Silver Line boats through lovely scenery. Sibellus (q.v.) was b. in H. Pop. 24,700.

Hameln (Hamelin), Ger. tn in the Land of Lower Saxony (q.v.), on the Weser (q.v.), 25 m. SW. of Hanover. It has fine old houses, and is famous as the tn of the Pied Piper legend—immortalised in Eng. by the poem of Robert Browning. During the Second World War the 18th (Amer.) Corps of the First Army estab. a bridgehead over the Weser at H. on 6 April 1945. There are paper and textile manufs. Pop. 51,000.

Hammerling, Robert (1830–89), Austrian poet (real name Rupert Hammerling), educ. at the univ. of Vienna. In 1860 he pub. his first vol. of lyrics, *Sinnen und Mienen*, which was followed by *Amor und Psyche*, 1882, and *Blätter im Winde*, 1887. *Ahasver in Rom*, 1866, and *Der König von Zion*, 1869, 2 powerful satiric epics, are his masterpieces. See his life by M. M. Rabenlechner, 1896 and 1901; and A. Polzer, 1890.

Hamerton, Philip Gilbert (1834–94), art critic, b. Laneside in Lancs. He worked as landscape painter in Scotland, but turned to criticism and was editor of *The Portfolio* from 1869 till his death. His pubs. include *A Painter's Camp in the Highlands*, 1863, *Sketching and Etching*, 1866, *Contemporary French Painters*, 1868, *Painting in France after the Decline of Classicism*, 1869, *The Graphic Arts*, 1882, and *Landscape*, 1885. Of his more general literary works the chief are *The Intellectual Life*, 1873, and *Human Intercourse*, 1884. His autobiography and a memoir by his wife were pub. in 1896.

Hamesucken, in Scots law, means the felonious seeking of a person in his dwelling-house. It consists essentially in the co-existence of entry with intent to commit an assault and actual personal violence. The entry may be either by terrifying those within or by artifice, or by secretly entering and lying in wait for an opportunity of assault. Formerly H. was punishable with death, but imprisonment has now been substituted.

Hamhung, walled tn of Korea, situated near the E. coast of the peninsula in lat. 39° 56' N. Pop. 78,000.

Hami, Kamei, or Khami, tn of Sinkiang, China, situated in an oasis about lat. 42° 50' N., and long. 93° 28' E. It is an important trading centre. Rice and fruit are grown in the neighbourhood. The Lanchow-Sinkiang Railway, under construction, passes the tn. Pop. c. 10,000.

Hamilcar, name of sev. Carthaginian generals, the chief of whom was *Hamilcar Barca* (d. 229 BC). During the first Punic war he was in command of the Carthagin-

ian forces in Sicily (247), where he maintained his position on Mt Hercte, near Panormus. After the Rom. victory off the Aegates, which brought the war to an end, he returned to Carthage, where he suppressed a revolt of mercenaries (240–238). In the latter year he went with his young son Hannibal (q.v.) to Spain, and began the conquest of that country, much of which he accomplished during the following years. He was drowned during a campaign against the Vettones.

Hamilton, famous Scottish family, who trace their descent back to Walter Fitz-Gilbert (fl. 1295), son of Gilbert de Hameldone, who is mentioned in a charter of 1272. Walter owned lands in Lanarkshire, and for a time swore fealty to Edward I of England. After the battle of Bannockburn, however, he joined King Robert Bruce, and was subsequently knighted and granted the barony of Cadzow in Lanarkshire, receiving lands forfeited by adherents to the Eng. crown. His elder son, David, was the first to assume the surname H. He was taken prisoner at the battle of Neville's Cross in 1346, but was ransomed, and sat among the barons in the Scottish Parliaments of 1368, 1371, and 1373. From his grandson, Sir James H. of Cadzow, are descended the H.s of Silvertownhill and of Dalzell. His eldest son, also called James, was created Lord H. in 1445. He was the first layman to found a college in Scotland; as well as endowing a college at Glasgow (1460), he also founded the collegiate church of H. He was connected, by his marriage with the widow of the 5th earl, with the powerful family of Douglas, whom he assisted in their struggle against James II. About 1455 he changed sides, and on the death of his wife, being now in royal favour, married Princess Mary, sister of James III and widow of the earl of Arran. His only son, James, by Mary, negotiated the marriage between Margaret Tudor and James IV of Scotland. In 1503 this James, 2nd Lord H., was created earl of Arran, and succeeded to lands on his mother's side. He d. in 1529, and his heir, James, 2nd earl of Arran (by Janet Beaton, niece to the cardinal), on the death of James V (1542) was appointed regent of Scotland and governor to the young Queen Mary. In 1549 he was granted the duchy of Châtelleraut by Henry II of France, and resigned from his governorship in favour of Mary of Guise, the queen-mother, in 1554. His son, John H., was created marquess of H. in 1599. He d. in 1604, when his son James became 2nd marquess. James was created earl of Cambridge (1619), and d. in 1625. The 3rd marquess, James, was created by Charles I duke of H. (1643) for the services he had rendered in the struggle with the Scottish Covenanters. He headed a Scottish army against the Parliamentarians, but was defeated by Cromwell at Preston in Lancs, and was beheaded at Westminster in 1649. His brother Wm, created earl of Lanark (1639), succeeded to the dukedom. He negotiated with Charles I at Newcastle (1646), and signed

the 'Engagement' at Carisbrooke Castle (1647), fleeing with other Royalists to Holland in 1648. He returned with Prince Charles in 1650, and d. in the following year from wounds received at the battle of Worcester. The 2nd duke of H. was succeeded by his niece, Lady Anne, whose husband, Wm Douglas, earl of Selkirk (1635-94), was created duke of H. for life only (1660). The Duchess Anne resigned her titles in 1698 in favour of her eldest son, James Douglas, earl of Arran, who was formally created duke of H. In 1711 he was granted an Eng. peerage, being created duke of Brandon. In the following year he fought the famous duel in Hyde Park with Charles, Lord Mohun (see Thackeray's *Esmond*), the principals being killed. In 1761, by the death of the duke of Douglas, the titles of his family devolved on the H.s. The 11th duke was Wm Alexander (1811-63), who married Princess Marie Amélie, a cousin of Napoleon III. His son Wm Alexander (1845-95) received the anc. title of duke of Châtelherault, granted to his ancestor in 1549. The 13th duke, Alfred Douglas (1862-1940), was descended from (Claud H., the 3rd son of the 4th duke. From this Claud are descended the dukes of Abercorn, whose eldest sons are styled by courtesy marquess of H. The 14th and present duke, Douglas Douglas-Hamilton (b. 1903), is the eldest son of the 13th duke. He served in the R.A.F., 1930-45. He was chief pilot of the Mt Everest flight expedition, 1933. Since 1953 he has been lord high commissioner to the General Assembly of the Church of Scotland.

See G. Burnet, *Memoirs of the Lives and Actions of James and William, Dukes of Hamilton and Châtelherault*, 1677; S. R. Gardiner, *The Hamilton Papers relative to 1638-50* (for the Camden Society), 1880; and G. Hamilton, *The House of Hamilton*, 1934.

Hamilton, Alexander (1757-1804), Amer. statesman and economist, one of the men who had most to do with shaping the constitution, policies, and politics of the U.S.A., was b. a Brit. subject in the is. of Nevis, West Indies. His father was a Scottish merchant. Misfortunes dogged H.'s parents. His mother d. in 1768, and his father, though surviving until 1799, was bankrupt, and left the lad to shift for himself. At the age of 12 he had to leave school and enter the counting-house of a merchant. Through the aid of friends, however, he was enabled in 1772 to go to a school in Elizabethtown, New Jersey, and in 1773 he entered King's College, New York city, which afterwards became Columbia Univ. H. proved himself a brilliant pupil, but he left his text-books when the Amer. colonists rebelled against England and identified himself with them. In the campaign of 1776 he acquitted himself so well that he came to the notice of George Washington, commander-in-chief of the Amer. Army. From that time on dated a close companionship and friendship with the 'father of his country' which never abated. Washington appointed him to his staff, and made him his private

secretary and aide, with the rank of lieutenant-colonel. He was given a command and led the Amer. column which carried the first Brit. works at Yorktown. In 1780 the handsome and brilliant young officer made a great matrimonial match, marrying Elizabeth, daughter of Gen. Philip Schuyler, member of one of the oldest of New York families. H. was a member of the Continental Congress of 1782-3, and then took up the practice of law in New York city. He was one of the delegates from New York state at the Annapolis convention of 1786, and drafted the call for the Federal convention of 1787 at Philadelphia, which was to draw up a constitution for the new-born Amer. nation. He was chosen as one of the New York delegates to this. H. was one of the conservative elements in the historic gathering at Philadelphia. He favoured an upper house of Congress chosen for life on a property basis, and a lower house chosen by manhood suffrage. Finding this impossible in the mood of the colonists, he made himself the leader of those who sought to interpolate, and did interpolate, into the constitution as many checks and safeguards as possible. With James Madison and John Jay he wrote the famous series of articles expounding the art of gov. which were afterwards collected in the classic vol., *The Federalist*. When Washington was chosen as president, H. became his secretary of the Treasury, and outlined a system for the encouragement of home industries which was the precursor of the country's later protective tariff system. In all things he and Thomas Jefferson, who was secretary of state in the same Cabinet, were at loggerheads. H. was for centralisation of power. Jefferson was opposed to it. H. looked to the leadership of money and property. Jefferson was a thoroughgoing democrat. In a sense H. was thus the father of the Republican party of to-day, and Jefferson of the present Democratic party. Many of the principles they then asserted against each other are to-day the guiding principles of the 2 great Amer. political parties. H. resigned from office in 1795. His last years were not happy. He indulged in intrigues against John Adams, 2nd president of the U.S.A., and had bitter political quarrels with Aaron Burr for power in New York state. The result of this was a duel with Burr in which H. was mortally wounded, 11 July 1804, dying the next day. His works were pub. by his son in 7 vols., 1850-1, and by H. Lodge in 9 vols., 1885-6. See lives by J. Morse, 1876, and H. Lodge, 1882; and studies by G. Shea, 1877 and 1879, F. Oliver, 1906, and N. Schachner, 1946. See also Gertrude F. Atherton, *The Conqueror*, a novel, 1902, revised ed. 1918.

Hamilton, Count Anthony (c. 1646-1720), Irish-Fr. author; his father was George H., 2nd earl of Abercorn and head of the family of H. in the peerage of Scotland. The place of his birth in Ireland is variously given as either Roscrea or Drogheda. He was carried to France when a child 'and a Frenchman

he remained, in all but blood, till the end' (Charles Whibley). On the accession of James II he obtained the command of an infantry regiment in Ireland and was made governor of Limerick; but after the battle of the Boyne he was again in France as an exile. Though an exile he was much at home, especially as his sister had married the Comte de Grammont, and the rest of his life was spent mostly at the châteaux of his friends. It was at one of these, at Sceaux, that he wrote the *Mémoires* of his brother-in-law, the Comte de Grammont, that made him famous. They give an admirable picture of the court of Charles II and were pub. anonymously in 1713. With this work H. ranks with the most classical writers of France, and he is one of the rare Eng.-speaking writers who, writing in the Fr. language, has become a classic. He also wrote *Le Belin*, *Fleur d'Épine*, and other tales in imitation of, and as satires on, the romances which Galland's trans. of the *Arabian Nights* had popularised in France.

Hamilton, Anthony Walter Patrick (1904-), novelist and playwright, b. Hassocks, Sussex. Educ. at Westminster, he was for a time with a repertory company. His early novels were *Monday Morning*, 1925, *Craven House*, 1926, and *Two-pence Coloured*, 1928; a trilogy, *The Midnight Bell*, 1929, *The Siege of Pleasure*, 1932, and *The Plains of Cement*, 1934, was pub. in 1 vol. as *Twenty Thousand Streets under the Sky*, 1935. Later novels are *Impromptu in Moribundia*, 1939, *Hang-over Square*, 1941, *The Slaves of Solitude*, 1947, and *The West Pier*, 1951; critics have noted his feeling for 'Dickensian' characters. Among his plays *Angel Street* has been especially successful; others are *Rope*, 1929, *The Duke in Darkness*, 1943, and *The Man Upstairs*, 1954. *Money with Menaces* and *To the Public Danger*, both 1939, are radio thrillers.

Hamilton, Sir Edward (1772-1851), Brit. admiral. While in command of the *Surprise* he succeeded in capturing 80 privateers (1797-8), and rescued the *Hermione* from the batteries of Puerto Cabello. He was taken prisoner by the Fr. (1800), but was soon exchanged, and in the following year blockaded the N. coast of France. He was promoted to the rank of admiral in 1846.

Hamilton, Elizabeth (1758-1816), authoress, b. Belfast. On the death of her father she was adopted by his sister, Mrs Marshall, and brought up in Stirling. She subsequently lived in Bath, Harrogate, and London, and d. in Edinburgh. Her works include *Letters of a Hindoo Rajah*, 1796, *Memoirs of Modern Philosophers* (a satire on the enthusiasts of the Fr. Revolution), 1801, *Life of Agrippina*, 1804, and *The Cottagers of Glenburnie*, 1808, which shows her at her best in depicting domestic life in rural Scotland. She also wrote the well-known song, 'My Ain Fire-side.' See Elizabeth O. Bengier, *Memoirs of Mrs Elizabeth Hamilton*, 1818.

Hamilton, Emma, Lady (née Emma Lyon) (c. 1761-1815), adventuress, prob-

ably b. in Cheshire. She came to London as a nursemaid about 1778. Her extraordinary beauty brought her many admirers, and she became the mistress first of Sir Harry Fetherstonhaugh, and then of the Hon. Charles Greville. Romney (q.v.) painted many well-known pictures of her. From 1786 she lived with Sir Wm H., the ambas., and married him 5 years later. While still living with her husband she became the mistress of Nelson about 1798, and in 1801 gave birth to a child, Horatia, of which Nelson was the father. Hamilton and Nelson remained on good terms until the former's death in 1803. After Nelson's death Lady H., who was extremely extravagant, was imprisoned for debt, but fled to Calais, where she d. in obscurity. See life by O. A. Sherrard, 1927.

Hamilton, Gavin (1730-97), Scottish painter and antiquary, b. Lanark. He studied painting under Masucci at Rome, where he principally lived. While in London he joined the committee whose object it was to found a royal academy (1755). His excavations at Hadrian's villa at Tivoli, at Civita Vecchia, and elsewhere, rendered great service to art. His marbles are in the Louvre; his collection of busts and bas-reliefs in the Museo Pio-Clementino in the Vatican. In 1773 he pub. *Schola Italica picturæ*.

Hamilton, Lord George Francis (1845-1927), statesman, a younger son of the 1st



LORD GEORGE HAMILTON

duke of Abercorn. He was educ. at Harrow. In 1868 he first entered Parliament as a Conservative. He received an appointment in the India Office as under-secretary of state (1874-8) from Disraeli, which he exchanged for that of vice-president of the Council of Education (1878-80). He was twice First Lord of the Admiralty, in 1885-6 and 1886-92.

In Balfour's ministry he was secretary of state for India, but resigned office in 1903 on the tariff question. Chairman of the Poor Law Commission (1905-9). Chairman of Mesopotamia Commission (1916-1917), whose findings severely criticised the organisation of the Brit. expedition up to that date. He pub. his autobiography in 1922.

Hamilton, Sir Ian Standish Monteith (1853-1947), Brit. soldier; b. Corfu. He was educ. at Cheam, at Wellington College, Sandhurst, and in Germany—entering the army in 1873. He served in the Afghan war (1878-80) and the Boer war (1881)—had one arm permanently disabled at Majuba Hill—and took part in the Nile expedition (1884-5), when he was awarded the Khedive's star. He also saw service in the Burmese expedition (1886-7), and with the Chitral relief force under Sir R. Low (1895). In 1897-8 he commanded the 3rd Brigade during the Tirah campaign. In 1898 he went to Hythe as commandant of the school of musketry. On the outbreak of the South African war he went out to Natal, and was appointed head of the staff of the Natal field force under the generalship of Sir George White, being present at the battle of Elands-laagte, where he commanded a brigade with the local rank of major-general. He fought with conspicuous gallantry during the defence of Ladysmith, and was promoted to the rank of major-general.

In 1901-2 he was appointed chief of the staff of South Africa to Lord Kitchener, and was put in command of the mobile columns in the W. dist. of the Transvaal. He returned at the end of 1902, having been created a K.C.B., to the War Office with the appointment of military secretary. He had left South Africa a lieutenant-general. He served as a liaison officer with the Jap. Army in the Russo-Jap. war (1904-5). In 1905 he was given the S. Command; he was promoted full general in 1907, and in 1910 became commander-in-chief of Malta and G.C.B. At the beginning of the First World War he commanded the home defence army. In Mar. 1915 he took command of the Mediterranean expeditionary force—i.e. that employed to force the Dardanelles. He landed on Gallipoli peninsula in April. In Aug. a grand effort was only partially successful. The gov. at home, finding H. opposed to withdrawal, had him superseded in Oct. by Sir Charles C. Monro. H. was Lieutenant of the Tower of London, 1918-20. Lord rector of Edinburgh Univ., 1932-5. The fact that H. failed in the one campaign in which he exercised high command made no difference to the strong appeal he made to the general public. For the circumstances of the Gallipoli campaign were understood and H.'s tremendous difficulties fully appreciated, while it was generally thought that had he not been starved of resources he might have achieved an outstanding victory. Yet with all his gifts and industry H. just failed to be a great soldier. He may have lacked the solid foundations which sustained others, or

again he may have been one of those whom Napoleon reproaches with seeing too many sides of a problem at once. However that may be, in the Gallipoli campaign, after the Suria landing, he did not reveal proof of the gift of power to gather into his hands all the loose threads, or to impress his determination on supine subordinates, or turn the fortunes of the day by his own influence and initiative; while throughout the campaign he was overshadowed by the figure of F.-M. Lord Kitchener. His chief publs. are: *A Jaunt in a Junk*, 1884; *A Ballad of Hajji*, and other Poems, 1888; *A Staff-Officer's Scrap-book during the Russo-Japanese War*, 1906; *Compulsory Service*, 1910; *Gallipoli Diary*, 1920; *The Soul and Body of an Army*, 1921; (with Victor Sampson) *Anti-Commando*, 1931; *When I was a Boy*, 1939; and *Jean—a Memoir*, 1942.

Hamilton, James, see **ARRAN**, EARL OF. **Hamilton, John McLure** (1853-1936), Amer. painter, b. Philadelphia, son of George H., M.D. He studied in Philadelphia, Paris, and Antwerp, and finally settled in London in 1878. He was chiefly a portrait painter, his work including portraits of Gladstone, Prof. Tyndall, Cardinal Manning, and Herbert Spencer. Pub. *Men I have Painted*, 1921.

Hamilton, Mary Agnes (1884-), novelist, b. Manchester. She was brought up in Glasgow, where her father, Robert Adamson, was prof. of logic. Educ. at Newnham College, Cambridge, she was a lecturer at Cardiff Univ., then joined the staff of the *Review of Reviews*. In 1905 she married C. J. Hamilton. In 1929 she was elected Labour M.P. for Blackburn, and from 1933 to 1937 she was a governor of the B.E.C. Her novels include *Less Than the Dust*, 1912, *Yes*, 1914, *Dead Yesterdays*, 1916, *Slings and Arrows*, 1918, *Full Circle*, 1920, *Special Providence*, 1930, *Murder in the House of Commons*, 1931, and *Life Sentence*, 1935. She also wrote lives of Ramsay MacDonald, 1925, Margaret Bondfield, 1926, Carlyle, 1926, John Stuart Mill, 1933, and Sydney and Beatrice Webb, 1933. Her autobiography, *Uphill All the Way*, appeared in 1949, and in the same year she was made a C.B.E.

Hamilton, Patrick (c. 1504-28), 'the protomartyr of the Scottish Reformation.' He graduated M.A. at Paris in 1520, and 3 years later became a member of Aberdeen Univ. But he came under suspicion on account of his Lutheran sympathies, and fled to Germany. On his return to Scotland (1527) he began to preach at Kincaid and attended a conference at Aberdeen. In 1528 he was brought to trial on a charge of heresy, and was burned at the stake on 29 Feb. His *Locci communes*, or 'Patrick's Places,' setting forth the doctrine of justification by faith, is included in Foxe's *Acts and Monuments*. See life, ed. by A. Cameron, 1930.

Hamilton, William (c. 1665-1751), of Giffertfield, poet, b. Ladyland, Ayrshire. His fame rests on his abridged and modernised ed. of Blind Harry's *Wallace*,

1722. He contributed to Watson's *Choice Collection*, 1706, and his 'Willie was a Wanton Wag' was included in the *Tea-Table Miscellany* of Allan Ramsay. He had a verse correspondence with Allan Ramsay which is to be found in the latter's *Works* as 'Seven Familiar Epistles which passed between Lieutenant Hamilton and the Author,' 1719.

Hamilton, William (1704-54), of Bangour, poet, b. Bangour, Linlithgowshire. He began his literary career by contributing verses to Allan Ramsay's *Tea-Table Miscellany*. He joined in the Jacobite rising of 1745, and celebrated the battle of Prestonpans in his *Gladsmuir*. After Culloden he wandered in the Highlands, where he wrote his *Soliloquy*, and took refuge in France. His friends, however, succeeded in obtaining his pardon, and he returned to Scotland, succeeding to the family estate of Bangour in 1750. The first to translate Homer into blank verse, he is best remembered for his fine ballad 'The Bracs of Yarrow.' See J. Paterson, *The Poems and Songs of William Hamilton*, 1850.

Hamilton, Sir William (1730-1803), diplomat and antiquarian, b. in Scotland. He served in the army from 1747 to 1758, when he married a Welsh heiress, a Miss Barlow (d. 1782). He went in 1764 as Brit. envoy to the court of Naples, and was recalled in 1800. He married in 1791 Emma Lyon (see HAMILTON, EMMA), who had previously been his mistress. He took many observations of volcanic activity and of earthquakes, wrote an account of Pompeii for the Society of Antiquaries of London, and formed a collection of Gk vases and other objects of antiquarian interest, part of which he sold to the Brit. Museum, 1772. He was one of the owners of the 'Portland Vase' (q.v.).

Hamilton, William (1751-1801), Scottish artist, b. London. He studied at a very early age under Zucchi, the painter of ornament, at Rome. R.A., 1789; exhibited from 1774 historical pictures, arabesques, and ornaments, scriptural and Shakespearean pictures, and portraits, including full-lengths of Mrs Siddons and John Wesley.

Hamilton, Sir William (1788-1856), Scottish philosopher, b. Glasgow. His father and grandfather had held the chairs of anatomy and botany in Glasgow Univ. In 1807 he entered Balliol College, Oxford, as a Snell exhibitioner, and graduated with first-class honours (1811), taking M.A. degree in 1814. He was called to the Scottish Bar (1813), but devoted his whole time to study and research. Was prof. of hist. (1821) and of logic and metaphysics (1836) at Edinburgh, and in 1829 began his literary career with a criticism of Cousin's *Cours de philosophie*, entitled 'Philosophy of the Unconditioned,' in the *Edinburgh Review*. To this paper he continued to contribute, publishing his essays in 1852-3 under the title *Discussions in Philosophy, Literature, and Education*. His influence was great, not only upon his own countrymen, but in Germany and

France. His lectures were pub. posthumously by H. L. Mansel and J. Veitch, 4 vols., 1858-60. Sir Wm H. pub. an ed. of Reid with 7 dissertations, 1846, and an ed. of Dugald Stewart, 9 vols., 1854-5, but in all his work he was hampered by ill-health, his right side having been struck with paralysis (1844). He invented the doctrine of the quantification of the predicate, urged that the philosophy of common sense is the highest human speculation, and distinguished reasoning in the quantity of extension from reasoning in the quantity of comprehension. See J. Veitch, *Memoir of Sir William Hamilton*, 1869; W. H. S. Monck, *Sir William Hamilton*, 1881.

Hamilton, Sir William Rowan (1805-65), very distinguished mathematician. He came of a Scottish family that had settled in Ireland, and was b. Dublin. He was a precocious boy, reading Hebrew at 7, and having a good knowledge of 13 languages at the age of 13. In later life he read Sanskrit and Persian for recreation. In his early teens he showed extraordinary mathematical ability, and when 23 years of age, Dr Brinkley, the astronomer, said of him: 'This young man, I do not say *will* be, but *is*, the first mathematician of his age.' At the age of 22 he was appointed prof. of mathematics at Trinity College, Dublin, and Royal Astronomer of Ireland. H.'s *Theory of Systems of Rays* was pub. by the Royal Irish Academy in 1828, and made a great sensation among European mathematicians, and he gained in reputation by his subsequent works, which include 'A General Method in Dynamics,' in *Philosophical Transactions*, 1834-5, and *The Elements of Quaternions*, 1866. His *Mathematical Papers* were ed. by A. Conway and L. Sygne, 1931. See life by R. Graves, 1882, new ed. 1903; and T. T. Segerstodt, *The Problem of Knowledge in Scottish Philosophy* (Lund), 1935.

Hamilton: 1. Tn and parl. burgh of Lanarkshire, Scotland, on l. b. of the R. Clyde, 11 m. SE. of Glasgow. Mainly residential, and a centre of civic and legal administration of the co. It has fine public buildings, and a racecourse. Prin. industries include iron founding, carpet manuf., radio and other electrical products. Here also are the ruins of Cadzow Castle, belonging to the H. family, with part of Cadzow forest, home of the famous wild white cattle. Pop. 40,173.

2. City and port of entry of Ontario, Canada, cap. of Wentworth co., situated at the foot of the Niagara escarpment on the S. side of H. harbour (Burlington Bay), 40 m. SW. of Toronto and 56 m. WNW. of Niagara Falls. It is at the W. extremity of Lake Ontario, and its development was much accelerated after the cutting of the channel between the lake and H. Bay (otherwise known as Lake Geneva and Burlington Bay) between 1823 and 1832. It is an important railway centre on the Canadian National, Canadian Pacific, and Toronto, H., and Buffalo railways, besides being linked with the New York Central and other

Amer. lines. It is in the midst of a populous and highly cultivated fruit dist., yet is sometimes styled the 'Birmingham of Canada' on account of its 400 or more factories. It contains many fine residences, particularly those on the summit of the escarpment, and has wide streets. The most noteworthy buildings are the courthouse, city hall, post office, and public libraries. It is the seat of an Anglican and of a Rom. Catholic bishop. It is also the seat of McMaster Univ., the corporate name of what formerly was the Toronto Baptist College and the Woodstock College. There are many churches, public and technical schools and collegiate institutes, and 3 large hospitals. H. has more than 40 parks. Dundurn Castle in the park of that name contains the museum of the Wentworth Historical Society. There is an important lake commerce, and a good service of steamers, as well as every rail facility for export by land; while a civil airport was constructed before the Second World War. Excellent communications and transportation facilities, combined with cheap power, have made H. a thriving economic centre. Many large industries are located in the city, and some of the largest of these are situated on or near the waterfront. H. is the heart of the Canadian steel industry. Its other manufs. include cotton, woolen, and silk textiles, textile and agric. machinery, motor cars and motor tyres, furniture and glass-ware, wire cables, boots, and tobacco. H. was laid out and settled in 1813 on a plateau at the foot of the 'mountain,' where lies the business quarter of to-day. It was named in honour of the Hon. Robert H. of Niagara, who bought land here in 1813, and surveyed it as a township. La Salle had already explored the dist. in the mid 17th cent. The first dwelling is said to have been a log cabin built in 1778 by Robert Land, a United Empire Loyalist, on what is to-day the very heart of the city. In the year of settlement was fought the battle of Stoney Creek, in the war of 1812, between an Eng. force under Col. (later Sir) John Harvey and an Amer. force under Gens. Chandler and Winder, in which the Americans were routed and the 2 generals captured. The site of this battle has been kept as a public park with a memorial. Pop. 222,902.

3. City, cap. of Butler co., Ohio, U.S.A., on Great Miami R., 25 m. N. of Cincinnati. It manufs. paper products, machinery, and woollen goods, and trades in grain, hay, vegetables, tobacco, and live-stock. Pop. 58,000.

4. Bor. of New Zealand, North Is. It is the centre of the great Waikato dairying dist. Pop. 40,800.

5. Chief tn of the cos. Dundas and Normanby, Victoria, Australia. It is situated on the Grange Burne Creek, 50 m. from Portland, and 198 m. W. of Melbourne. Sheep-farming is carried on in the dist., and there are meat-preserving works; frozen mutton is exported. Pop. 5000.

6. VII. in Northumberland Co., New

South Wales, Australia; it is a suburb of Newcastle. Pop. 5000.

7. Cap. of Bermuda, situated on Great Bermuda or Main Is., the largest is. of the group; so named after Henry H., governor of Bermuda when it was incorporated in 1790. It superseded St George's as the seat of gov. of the colony in 1815. It is laid out on a rectangular plan on gently rising ground. Almost all the houses are built of rock coral, and have white roofs. Old-fashioned horse-drawn victorias still ply for hire. Notable buildings in Front Street are the cable office, bank of Bermuda, and Butterfield's bank. On the N. side of the square stand the public buildings erected in 1839, containing the council chambers and gov. offices. On the S. side is the cenotaph, unveiled in 1925 to the memory of Bermudians who fell in the First World War. Near the public buildings is the Sessions House dating from 1817; its upper part is the House of Assembly and the lower the Courts of Justice. The clock tower of the Sessions House was erected in 1893 to commemorate Victoria's jubilee in 1887. The cathedral of the Holy Trinity replaces the building burned down in 1884; it is a fine structure of indigenous limestone faced with Caen stone for doors and windows; the tower, of Nova Scotian freestone, is 144 ft high. The foundation stone of the sumptuous H. hotel was laid by Capt. Charles Elliott, R.N., then governor of Bermuda, in 1852. Mount Langton, the governor's residence (1 m. from the wharf), was completed in 1892; it takes its name from an estate in Berwickshire, owned by Sir James Cockburn, governor, 1814-1819. Admiralty House, residence of the commander-in-chief, West Indies station, is 1½ m. W. of Mount Langton. Pop. 3000.

Hamilton Bay, see under HAMILTON 2.

Hamilton Group, middle div. of the upper Devonian strata of New York; its deposits are of limestones, sandstones, and shales.

Hamilton Mount, California, U.S.A., 13 m. E. of San José, with the Lick Observatory, containing the second largest refracting telescope ever made. Altitude 4372 ft.

Hamilton Port, group of little is. off S. coast of Korea, occupied by the Brit., 1885-7.

Hamilton, or Grand, River, Canada, issues from Lake Petchikapou, flows through a chain of lakes below which are the Grand Falls, about 2000 ft high, and enters the Atlantic through Labrador at H. Inlet.

Hamites (from Ham, son of Noah), anct African race. The term 'Hamitic' is especially applied to a group of African languages, comprising the anct Egyptian, the Berber, Galla, and cognate surviving tongues. The H. are commonly included among the white races, as also are their neighbours the Semites; but some consider that Hamitism is nothing more than a specialised form of Semitism. Both Semitic and Hamitic mythologies are derived from the primeval cherubic worship of Eden. The Hamitic tongues

comprise the Berber and most of the languages of the Sahara, the old Egyptian language and Coptic, the Cushitic, E. Hamitic, and that of the Beja, Somalis, Gallas, and other peoples of Ethiopia and the neighbouring country. Both the Bantu and Hottentot languages have Hamitic elements, a fact which seems to corroborate the older belief of some bygone Egyptian migration southward. See also BANTU; GALLAS. See C. G. Seligman, *The Races of Africa*, 1939.

Hamley, Sir Edward Bruce (1824-93), general and author, b. Bodmin, Cornwall. He entered the Royal Artillery in 1843, served in Gibraltar, and through the Crimean campaign, where he won special distinction at Inkerman. His articles in *Blackwood's Magazine* brought him literary recognition and led to his appointment as prof. of military hist. at Sandhurst in 1859. His lectures were afterwards pub. as *The Operations of War*, 1867. H. was commandant at the staff college (1870-7), and commander of a div. in Egypt (1882), where he took part in the battle of Tel-el-Kebir. He publicly expressed his dissatisfaction at what he considered lack of recognition of his services. From 1885 to 1892 he was M.P. for Birkenhead. See I. Shand, *Life of Hamley*, 1895.

Hamlin, Hannibal (1809-91), Amer. statesman, b. Paris, Maine. He was admitted to the bar in 1833, and soon entered the political arena as an anti-slavery Democrat. He was a representative in Congress from 1843 to 1847, and a member of the U.S. Senate 1848-56, 1857-61, 1869-81. In 1856 he broke with the Democrats on the question of slavery and joined the Republican party, who elected him governor of Maine in the same year, an office which he resigned after a few weeks to return to the Senate. From 1861 to 1865, during the Civil war, he was vice-president of the U.S.A. under President Lincoln. He was minister to Spain, 1881-2. See C. E. Hamlin, *Life and Times of Hannibal Hamlin*, 1899.

Hamm, Ger. industrial in the Land of North Rhine-Westphalia (q.v.), on the Lippe, 54 m. N.E. by E. of Düsseldorf (q.v.). It has docks on the Lippe canal, and is the railway communications centre of the Ruhr (q.v.) dist.; its marshalling-yards are the greatest in the Federal Rep. During the Second World War it suffered severely. It was heavily raided by the R.A.F. on 8 July and 7 Aug. 1941 and repeatedly thereafter, being chosen by the Americans for testing their heavy bombers on 4 Mar. 1943. In the operations for 1945 for the envelopment of the Ruhr, the Germans, under F.-M. Model, attempted to strike out from H. in the N. and Siegen in the S., but these attempts, like the co-operating counter-attacks from outside the pocket, were abortive (see WESTERN FRONT IN SECOND WORLD WAR). Pop. 65,000.

Hammam-Rirha, watering-place in Algeria in a beautiful mt. dist., having saline and ferruginous springs, near the ruins of Aquae Calidae.

Hammamet, seaport of Tunisia, North Africa, on the Gulf of H., a bay of the Great Syrtis, 42 m. S.E. of Tunis. The harbour is insecure. In the Tunisian campaign of 1943 there was a fierce tank battle at Hammam Lif, where the Brit. were checked on 8 May; but they broke through the centre 2 days later, and by dawn on 11 May they had driven across to H. to seal off the peninsula and bar the road of retreat to the Ger. and It. armies. Pop. 5000. See AFRICA, NORTH, SECOND WORLD WAR, CAMPAIGNS IN.

Hammarskjöld, Dag Hjalmar Agne Carl (1905-), Swedish secretary-general



Royal Swedish Embassy

DAG HAMMARSKJÖLD,
SECRETARY-GENERAL OF THE UNITED
NATIONS

of the Stockholm Univ. An outstanding economist, he was chairman of the bank of Sweden, 1941-8, and minister of foreign affairs, 1951-3. In 1949 and 1951-3 he was the Swedish delegate to the U.N. General Assembly, and he was elected secretary-general on 10 April 1953, in succession to Trygve Lie (q.v.). Since that date H. has occupied his post with distinction and vigour. Particularly notable aspects of his term of office have been his part in the final stages of the Korean truce negotiations (1953); his visit to Peking (Jan. 1955) to discuss the release of U.N. personnel held prisoner in China (11 Amer. airmen concerned were released Aug. 1955); and his considerable personal part in the intervention of U.N.O. in the Suez crisis, 1956-7. In 1957 H. was

re-elected secretary-general for another period of 5 years.

Hamme, tn in the prov. of E. Flanders, Belgium, on the R. Durme, 19 m. ENE. of Ghent. Pop. 16,700, engaged in agriculture and manu. of lace, ribbon, oil, soap, and textiles.

Hammer, implement consisting of a heavy head, usually of metal, but sometimes of wood or stone, set crosswise on a handle and used for striking blows; the name is also applied to heavy masses of machinery in which a block of metal is used for the same purpose (see **STEAM AND POWER HAMMERS**). H. of stone have been found among antiquities and are still in use among barbarous peoples. The H., more often under its Fr. name of *marteau-de-fer*, was a common weapon in war throughout medieval times. The word is applied to many objects which resemble the common H. in appearance or use, as for instance the 'striker' in a clock or in a bell, a part of the sounding mechanism of a pianoforte, and the part of a gun which, by its impact on the cap, explodes the charge. It has also been used as a nickname for noted fighters, e.g. 'Hammer of the Scots' for Edward I.

Hammer, Throwing the. This ancient sport is supposed to date from the ancient Taitteann games of Ireland. But not until 1866 was it included in the Oxford and Cambridge sports, and in 1900 in the Olympic games. The H. consists of a spherical brass ball filled with lead, or of a lead or cast-iron sphere, attached by a swivel to a thin steel wire which is attached by a simple loop to a triangular handle of sufficient size to admit the fingers of both hands. The overall length of the H. must not be more than 4 ft and its total weight must not be less than 16 lb. The H. is thrown from a circle of 7 ft internal diameter. The H. is swung 3 times round the head, and the thrower makes 2, 3, or 4 turns within the circle. If the action is performed smoothly the thrower, after releasing the H., remains stationary in the circle and faces the direction in which the H. is travelling. Great skill is required, combined with physical strength.

Since the first 200-ft throw was achieved in 1952 rapid strides have been made, especially by Russian and Amer. competitors. The rivalry between athletes of these 2 countries was the feature of the 1956 Olympic Games (q.v.) hammer throwing competition. H. V. Connolly (U.S.A.) won the title with 207 ft 7½ in. In the same year he set a world record of 224 ft 10½ in.

Hammer-beam Roof, an elaborate type of roof-truss, peculiar to England, and used in late-Gothic and Tudor architecture. There are fine examples at Westminster Hall, 1395-9, and Hampton Court Palace, 1530-5.

Hammer-head, or **Hammer-headed Shark**, shark of the family Sphyrnidae, the species of which are found in all warm seas. It is generally from 11 to 15 ft in length, and is so called from the peculiar shape of its head, which resem-

bles a double-headed hammer laid flat, on the flattened ends of which the eyes are placed. Specimens over 13 ft in length have been captured round the Brit. coasts.

Hammerich, Peter Frederik Adolf (1809-77), Dan. theologian and author, b. Copenhagen; in 1845 became pastor in Copenhagen, and in 1859 was appointed prof. of theology at the univ. there. His prin. historical works are *Danmark i Valdemarernes Tid*, 1847, *Danmark under de tre Nordiske Rigers Forening*, 1849-54, and *Danmark under Adelsvalden*, 1854-9. He also pub. some popular national songs in *Skandinaviske Rejseminder*, 1840.

Hammerling, Rupert, see **HAMERLING, ROBERT**.

Hammersmith, metropolitan bor. of London, the westernmost bor. on the N. bank of the Thames. H., with Fulham, was the winter camp of the Dan. invaders in AD 878-9, and formed part of the par. of Fulham until 1834. Old H. bridge (1825-7) was the first suspension bridge near London, but was insecure and replaced in 1887. St Paul's School (q.v.), Dean Colet's foundation, was moved to its present site in H. Road in 1883. Other buildings of H. are Wormwood Scrubs Prison, Olympia (q.v.), the 'White City' buildings and grounds, originally occupied by the Franco-Brit. exhibition of 1908, and the W. London Hospital. James Thomson wrote his *Seasons* in H., and Wm Morris lived there. The chief industries are iron- and dye-works, lend- and oil-mills, boat-building yards, motor works, and distilleries. The name derives from 'hammersmithy,' i.e. 'the hammersmith's smithy.' H. and the adjoining bor. of Fulham return 3 members to Parliament, 1 each for the constituencies of H. and Fulham, and 1 for the newly created bor. constituency of Baron's Court, which is comprised of 4 wards of H. and 3 of Fulham. Area 2287 ac.; pop. 116,500. See also **KENSAL GREEN**.

Hammerstein, Oscar: 1. (1847-1919) Theatre manager, b. Berlin but emigrated to the U.S.A. as a youth. He earned his living in a cigar factory where he invented a machine for spreading tobacco leaves which increased his fortunes. H. was founder and editor of *United States Tobacco Journal*. He leased the Stadt Theatre, New York, 1870, and built numerous theatres in New York, including Harlem Opera House (1880), Victoria Music Hall (1893), Columbus Theatre (1895), Olympia Music Hall (1895), Republic Theatre (1900), Manhattan Opera House (1906), and Lexington Theatre (1912). He was in competition with the Metropolitan Opera (1906-10), to whom he sold out in 1910. He opened theatres in Philadelphia and London (London Opera House in Kingsway, later the Stoll Theatre).

2. (1895-) Nephew of the above and known as 'O. H. II.' playwright and librettist, has written many musical plays. Among them are *Waldflower*, 1923, *Rose Marie*, 1924, *Sunny*, 1925. *The*

Desert Song, 1926, *Show Boat*, 1927, *New Moon*, 1928, *Music in the Air*, 1932, *Oklahoma!*, 1943, *Carmen Jones*, 1943, *Carousel*, 1945, *South Pacific*, 1949, and *The King and I*, 1951, some of these being written in collaboration. He and the composer Richard Rodgers had 4 consecutive successes at Drury Lane from 1947 to 1956. Many successful films have been made from his plays. He is the author of the lyrics of many songs, including 'Ol' Man River,' 'Lover Come Back to Me,' 'Oh, What a Beautiful Mornin',' 'Some Enchanted Evening,' 'Getting to Know You,' and 'Hello Young Lovers.'

Hammerton, Sir John Alexander (1871-1949), editor and critic, b. Alexandria, Dunbartonshire. He became a journalist and ed. various books and magazines in London. He also ed. many works of reference pub. in fortnightly or weekly parts, including the *Universal Encyclopedia*, *Universal History*, *Peoples of All Nations*, and *Countries of the World*. In each of the 2 world wars he ed. a weekly magazine, *War Illustrated*, recording its progress. Among his own writings are *Stevensoniana*, 1903, *George Meredith in Anecdote and Criticism*, 1909, *Memories of Books and Places*, 1928, and *Barrie: the Story of a Genius*, 1929. He was knighted in 1932.

Hammond, Henry (1605-60), divine, b. Chertsey, Surrey, and educ. at Eton and Magdalen College, Oxford. In 1633 the earl of Leicester presented him with the living of Penshurst in Kent, and in 1643 he was made archdeacon of Chichester. At the outbreak of the Civil war he joined the king at Oxford and attended him as chaplain during his captivity. He was deprived of his sub-deanery of Christ Church by the Parliament, and d. in retirement at Westwood, Worcestershire. At Oxford he pub. his *Practical Catechism* in 1644, but as an author he is best remembered by his *Paraphrase and Annotations on the New Testament*, 1653. See life by Bishop Fell, prefixed to H.'s *Miscellaneous Theological Works* (Anglo-Catholic Library), 1847-50.

Hammond, John Lawrence Le Breton (1872-1949), Brit. journalist and author, was educ. at Bradford Grammar School and St John's College, Oxford. He was successively editor of the *Speaker* and a leader-writer on the *Tribune*, the *Daily News*, and the *Manchester Guardian*. He became famous for his works on social and industrial hist., written mainly in collaboration with his wife, Barbara H. They include *The Village Labourer*, 1911, *The Town Labourer*, 1917, *The Skilled Labourer*, 1919, *The Rise of Modern Industry*, 1925, and *The Age of the Chartists*, 1930. He also wrote sev. biographies, including *Gladstone and the Irish Nation*, 1938, and a life of C. P. Scott, 1934. He received honorary doctorates of Oxford and Manchester, and was a fellow of the Brit. Academy.

Hammond, Robert (1621-54), soldier, colonel of a regiment of foot in the New Model Army. In the struggle between

the army and the Parliament in 1647, H. sided with the former, but retired from active service in the same year, and was appointed governor of the Isle of Wight, where the king was in his custody from Nov. 1647 to Nov. 1648. His uncle Thomas was lieutenant-general of the ordinance in the New Model.

Hammond, Walter Reginald (1903-), Glos. co. and England cricketer, b. Kent, educ. at Cirencester; brilliant batsman and fielder and a useful bowler. In May 1927 he beat W. G. Grace's month's record, scoring 1042; in 1933 and 1936 he made more than 1000 runs in Aug. In Australia, 1928-9, he made the record Eng. test aggregate, 905 runs (average 113.12) including 2 successive double centuries and a century in each innings of the 4th test. His 336 not out v. New Zealand at Auckland, 1935, was then the record individual test score. His career aggregate of 50,493 runs (167 centuries) included 7249 in tests. In 1928 he held 78 catches, 10 in a single match. He took 83 wickets in tests. He assumed amateur status and captained England against Australia, 1938 and 1946-7; against West Indies, 1939; and against South Africa, 1938-9. He played in 85 tests—a record for any cricketer—and his test match average was surpassed only by Bradman. No other batsman has headed the Eng. batting averages in 7 consecutive peacetime seasons; only 2 others, Hendren and Sutcliffe, have made a hundred centuries in a single decade. H. was in his generation a supreme batsman, whose quality cannot be measured by figures alone. See his autobiographies *Cricket My Destiny*, 1946, and *Cricket My Love*, 1948.

Hammond, city in Indiana, U.S.A., adjoining Chicago. It manufs. railway cars, steel, machinery, petroleum products, etc., and printing and publishing are carried on. Pop. 87,600.

Hammurabi, Khammurabi, or **Amurapi**, distinguished ruler of the 1st dynasty of Babylon, reigned 1792-1750 (Smith) or 1728-1686 (Albright). He regained independence for Babylon by defeating the Elamites and conquering neighbouring city-states from the Persian Gulf to the Middle Euphrates (Mari). His measures to unite a mixed Semitic and Sumerian pop. included the promulgation of a re-edited Code of Laws. Many letters and documents from this Old Babylonian period have been recovered. The identification of this H. with Amraphel of Gen. xiv. 1 is doubtful, since 3 other contemporary kings with this name are known (at Aleppo, Qatna, and Qurda). See also BABYLON; BABYLONIA; MARI.

Hamoaze, see PLYMOUTH SOUND.

Hamond, Sir Andrew Snape (1738-1828), naval captain, b. Blackheath, Kent. He entered the navy in 1753; took part in the battle of Quiberon Bay in 1759, and distinguished himself during the Amer. war of independence, especially in the defence of Sandy Hook (1778), for which he was knighted. In 1780 he was

appointed governor of Nova Scotia and commander-in-chief at Halifax. In 1793 he was appointed a commissioner of the navy, becoming comptroller of the navy in 1794, which post he retained, at the special request of Pitt, until his retirement in 1806. From 1796 to 1806 he was M.P. for Ipswich.

Hamond, Sir Graham Eden (1779-1862), admiral, b. London, only son of Sir Andrew Snape H., Bart. He was entered on the books of the navy in 1785; served in Lord Howe's flagship at the battle of the First of June, 1794; took part in the Baltic campaign; and was present at the battle of Copenhagen, 1801. He was made rear-admiral in 1825, and was commander-in-chief of the South American station, 1834-8. He became an admiral in 1847, and admiral of the fleet in 1862.

Hamp, Pierre (1876-), pseudonym of Pierre Bourillon, Fr. novelist, b. Nice. He came from a working-class family, and himself paid for his education at the Université Populaire. His first writings were pub. by Péguy in the *Cahiers de la Quinzaine*. He never forgot his past, and his novels deal with many different aspects of the working classes: *Le travail invincible*, 1916, *Les Métiers blessés*, 1919, *La victoire mécanicienne*, 1920, *Mes métiers*, 1931. The general title, *La peine des hommes*, which he has given to a series of his novels, indicates his preoccupation with social questions and with the happiness of the worker. In spite of his convictions, however, he never exaggerates, and his facts are generally accurate. See A. Beaumier, *Les idées de Pierre Hamp in Revue des deux mondes*, April 1923.

Hampden, 1st Viscount, see BRAND, HENRY BOUVERIE WILLIAM.

Hampden, John (1594-1643), politician, b. probably in London and educ. at Thame Grammar School and Magdalen College, Oxford. He entered Parliament at the age of 27, but first came into prominence in 1627, when he was imprisoned for declining to pay the forced loan raised in that year. He was a leader of the opposition to the arbitrary conduct of the king, and an objector to ship-money and other methods of raising money, which he regarded as illegal. H. soon became an acknowledged leader of the opposition to Charles I in the Commons. He took part in Strafford's impeachment and was one of the Five Members (q.v.) whom Charles attempted to arrest on 4 Jan. 1642. He took an active part in organising the parliament army, but early in the Civil war was mortally wounded at Chalgrove Field. H. stands out as a man of sincerity and selfless convictions; he was not himself a natural leader, and was much influenced by Pym (q.v.). See life by H. Ross Williamson, 1913; and C. V. Wedgwood, *Viet Studies*, 1948.

Hampden, Renn Dickson (1793-1868), Eng. divine, b. Barbados. He was appointed principal of St Mary's Hall, Oxford, in 1833; prof. of moral philosophy in 1834; and, in spite of violent opposition, regius prof. of divinity in 1836. His

Hampton lectures, delivered in 1832, on 'The Scholastic Philosophy considered in its relation to Christian Theology,' in which he upheld the theory that the authority of scripture is of greater weight than that of the Church, resulted in a charge against him of unorthodoxy, and a violent controversy ensued. His appointment as bishop of Hereford in 1847 was the signal for another outbreak. His chief works are *Lectures on Moral Philosophy*, 1835, *Work of Christ and the Spirit*, 1847, and *Fathers of Greek Philosophy*, 1862. See *Memorials* by his daughter, Henrietta Hampden, 1871.

Hampi, see VIJAYANAGAR.



JOHN HAMPDEN

Engraving after a print by J. Houbraken, 1740

Hampole, Richard Rolle (known as the Hermit of Hampole), see ROLLE, RICHARD.

Hampshire, or County of Southampton, S. maritime co. of England, bounded by Dorset, Wilts, Berkshire, Surrey, Sussex, and the Eng. Channel. The coast is broken by the great inlets of Langston and Portsmouth harbours (divided by Hayling and Portsea Is.), Southampton Water, Christchurch and Poole bays. The Isle of Wight is separated from the mainland by the Solent and Spithead. The surface of the co. is diversified by the Downs, rising to 940 ft in Sidown Hill, and 1011 ft in Inkpen Beacon, the highest chalk down in England. The SW. portion of the co., cut off by Southampton Water, is occupied by the New Forest (q.v.), while in the E. are remains of the forests of Bere, Woolmer, and Waltham Chase. The chief rivs. are the Avon, the Test, and the Itchen. The chief industries are agriculture and market-gardening, while H. pigs are famous. The manufs. are unimportant except those connected with the gov. establs. at Portsmouth. The co. is very rich in Rom. remains, including the

site of Silchester (q.v.). The medieval castle of Porchester incorporates much Rom. work. Notable monastic churches survive in use at Romsey and Christchurch, and ruins of conventual buildings at Netley and Beaulieu. A series of commons and manorial wastes on the edge of the New Forest (932 ac. in area), including Bramshaw and Cadnam, were acquired in 1928 by the National Trust. H. (exclusive of the Isle of Wight) returns 6 members to Parliament, and Portsmouth, Southampton, Bournemouth, and Gosport are parl. bors. Other important tns are Winchester (the co. tn), Aldershot, Andover, Basingstoke, and Romsey. Area (including the Isle of Wight) 1,055,811 ac.; pop. 1,036,000. See the Victoria Co. Hist., *Hampshire*; L. Ball and T. Varley, *Hampshire*, 1909; R. L. P. Jowitt, *Hampshire* (revised), 1949; and B. Vesey-Fitzgerald, *Hampshire and the Isle of Wight*, 1949.

'Hampshire,' Brit. armoured cruiser of the *Devonshire* type (naval estimate 1901-1902) with 2 torpedo tubes, 21,000 h.p.; 22.5 knots max. speed. It was sunk by a Ger. mine laid by submarine U75 off the W. Orkney coast soon after the battle of Jutland (6 June 1916), with the loss of Lord Kitchener and his staff, who were on a secret mission to Russia.

Hampshire Breed, see SHEEP.

Hampshire Regiment, The Royal, formerly 37th and 67th Foot, linked in 1881 to form the present regiment. The 37th was raised in 1702, and saw service in Holland under Marlborough and under George II at the battle of Dettingen. It was at Minden (1759) and in the Amer. war of 1776-7. It gained further laurels at the battle of Waterloo. The 67th was raised in 1756, the famous Gen. Wolfe being its first colonel. After a period of service in the West Indies it went to Spain in 1810, and served under Wellington during the Peninsular war. During the First World War it raised 36 battalions, which served in France, Flanders, Italy, Macedonia, Gallipoli, Egypt, Palestine, Mesopotamia, and Siberia. In the Second World War the H. R. fought in NW. Europe, and in Italy. A memorial to the men of the 4 battalions who lost their lives at the Salerno landing and in the subsequent fighting, in Sept. 1943, was dedicated in the chapel of St Martin and St George at Pontecagnano, 6 m. E. of Salerno. Other units took part in the bitter fighting, in 1945, in the vicinity of Goch, on the Siegfried line. It became a royal regiment in 1946. See C. T. Atkinson and D. S. Daniell, *Regimental History of the Royal Hampshire Regiment* (3 vols.), 1950-5.

Hampstead (meaning 'homestead'), parl. and metropolitan bor. and a residential suburb of NW. London. It became famous in the early 18th cent., while still a small vil. and a favoured pleasure resort, for its medicinal springs. The vil. grew rapidly, but urbanisation did not follow until the 1830's, after the development of Regent's Park to its S. Parts of H. near the heath still retain their

vil. character. Church Row contains excellent Georgian architecture. A house on the heath, now a private residence, was one of the resorts of the Kit-Cat Club (q.v.). Keats lived in Well Walk and later in John Street, now Keats Grove, where his house is kept as a memorial museum. Other famous residents include the earl of Chatham, Dr Johnson, Romney, Gainsborough, Constable, and Galsworthy. In the par. churchyard are the graves of many distinguished persons, including Constable, who sev. times painted H. scenes. The chief institutions are the orphan working school, the general and fever hospitals, and New and Westfield Colleges. The bor. includes the greater part of Primrose Hill on its S. side. H. Heath (708 ac. with Ken Wood, which adjoins it), once a resort of highwaymen, is a fine open space on high ground with excellent views. H. returns 1 member to Parliament. Area 2265 ac.; pop. 98,200. See also KILBURN. See J. H. Preston, *The Story of Hampstead*, 1948.

Hampstead Garden Suburb, a residential estate lying in the bors. of Hendon and Finchley, Middx, England. It was founded in 1906, chiefly through the advocacy of Henrietta Barnett (q.v.), as a planned suburb of London, with provision for cultural and religious activities, with shops only on the fringe, and without public houses. Part of the original purpose was mingling of social classes, but it has remained a middle-class area. The suburb proper, 317 ac., is controlled by a trust, but its total extent is now about 800 ac.

Hampton, Wade (1818-1902), Amer. soldier and statesman, b. Columbia, South Carolina; educ. at South Carolina Univ. In early life he served in the legislature of South Carolina, but his views as a Union Democrat were unpopular. He enlisted at the beginning of the Civil war, and formed and equipped the command of infantry, cavalry, and artillery known as 'Hampton's Legion,' which served with distinction at Bull Run and Seven Pines. H. was prominent at Gettysburg, in the Shenandoah Valley, and in command of J. E. Johnston's cavalry. He was governor from 1876 to 1878, and a senator from 1878 to 1891. See M. W. Weisman, *Giant in Gray*, 1949.

Hampton, city in, but independent of, Elizabeth City co., Virginia, U.S.A., a part of H. Roads, opposite Norfolk. It is served by the Chesapeake and Ohio railway. It has a normal and agric. institute for negroes, an artillery school, and Langley Air Force base. A strongly fortified naval station and a shipping point for fish and oysters. Pop. 5965.

Hampton, par. on the Thames in the bor. of Twickenham, Middx, England, formerly including H. Wick (q.v.), H. Court Park, and most of Bushy Park. In the early 13th cent. the manor passed to the order of St John of Jerusalem, from whom Wolsey obtained a 99-year lease in 1514. In the 18th cent. it became a fashionable residential area. Garrick

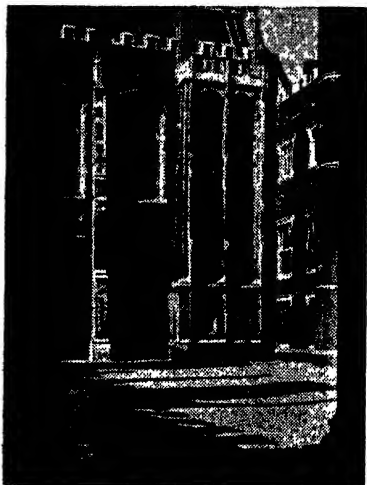
lived here from 1754 until he d. in 1779. His house near the riv., now called Garrick Villa was enlarged by Robert Adam. Fad. H. Green, which is just by H. Court Palace (q.v.), is some very good d. architecture, including Old Court House, where Wren lived from 1706 until he d. in 1723, and Faraday House, where Michael Faraday lived, 1858-67. The par. church, built 1830 on the site of an older church, contains monuments of notable people, including residents of H. Court Palace. The bridge (1933) was designed by Sir Edwin Lutyens.

Hampton Court Conference, was the conference between the bishops and the representatives of the Puritan clergy which took place at Hampton Court Palace in 1604. The Puritans petitioned the king for the reformation of alleged abuses in the Church of England, involving certain wording in the Prayer Book, ceremonies, vestments, etc. James rejected their demands, and rebuked them severely.

Hampton Court Palace, on the Thames, 15 m. SW. of London, is one of the greatest historical monuments in the U.K., and contains some of the finest examples of Tudor architecture and of Sir Christopher Wren's work. It was begun in 1514 by Cardinal Wolsey, then archbishop of York, and after Henry VIII the most powerful man in England. As he increased in wealth and favour, so he added to the ranges of buildings. Wolsey's household numbered over 400 persons, and 280 rooms were always ready for guests. This lavish display of wealth—he built 2 other country seats and also occupied York House (see WHITEHALL)—was probably a factor in his downfall. Tradition asserts that Wolsey, hoping to placate Henry VIII, presented him with H. C. P. On Wolsey's fall Henry enlarged it. Five of his wives lived here, and Jane Seymour d. here soon after giving birth to Edward VI. In 1604 the Hampton Court Conference (q.v.) met here. Mary I, Elizabeth I, James I, and Charles I (who was also imprisoned here) used the palace; so did Cromwell, and Charles II who laid out the gardens more formally, but not James II. With the accession of William and Mary, Sir C. Wren was asked to design a new palace; one of his plans involved the destruction of all the Tudor buildings except the Great Hall. Work began in 1689, but on Queen Mary's death complete rebuilding was abandoned. The interior was not completed until after William III's death. Since the time of George II no sovereign has resided in the palace. Queen Victoria opened the state rooms to the public in 1837. Nearly 1000 other rooms are granted by favour of the sovereign for the use of widows and children of distinguished servants of the Crown.

The range of buildings that comprises H. C. P. is grouped round 3 prin. courts on an E.-W. axis. The main approach now is from the W., by Hampton Green,

which leads by an outer court and a bridge across the dried moat to Wolsey's magnificent Gatehouse. Beyond is the first and largest court, Base Court, the buildings in which date almost wholly from Wolsey's time. The E. side leads by Anne Boleyn's Gateway to Clock Court. Above the E. side of the gateway is a panel with Wolsey's arms and motto, and above them is the famous astronomical clock, made in 1540 and still working. On the N. side is the Great Hall, built by Henry VIII in place of Wolsey's smaller hall, with a hammerbeam roof of unusual



John H. Stone

HAMPTON COURT PALACE, THE GREAT HALL

splendour. Grouped round the hall are the great Tudor kitchens, king's cellar, etc. Wren's Ionic colonnade on the S. covers some of Wolsey's rooms and the entrance to the State Rooms. Further E., and lying more to the S. than the two other courts, is Fountain Court, round which are grouped the prin. State Rooms, replacing most of Wolsey's buildings in this quarter. On the E. front Wren achieved an effect of quiet splendour without oppressive grandeur. The State Rooms are on the first floor, and divided into 2 adjoining suites, the King's Side on the S. facing the Privy Garden, and the Queen's Side on the E. facing the Fountain Garden, each with its own guardroom, presence, and audience chambers, etc. The Royal Chapel, beyond the N. side of Fountain Court, has 16th-cent. wooden fan-vaulting and a reredos carved by Grinling Gibbons. H. C. P. has a remarkable collection of pictures, the more important being Mantegna's 9

cartoons of 'The Triumph of Julius Caesar,' Lely's 'Windsor Beauties' (11 ladies of Charles I's court), and Kneller's 'Hampton Court Beauties' (9 ladies of William and Mary's court). On the E. side of the palace is the well-planned Fountain Garden, and on the N. are a Tudor tennis court, the Tiltyard Gardens, and the famous Maze. On the S. is the Privy Garden with the wrought-iron screen made up of 10 gates designed by Jean Tijou. There are very extensive grounds surrounding the palace and gardens. Wolsey originally enclosed about 2000 ac. The N. portion, Rushy Park, was laid out in its present form by William III; and the Lion Gates on the S. of this park were designed by Wren as part of a grand N. entrance to the palace. The S. portion of Wolsey's land is the Home (or Hampton Court) Park to the E., and it was here that William III took the fall from his horse that resulted in his death. See E. Law, *The History of Hampton Court Palace*, 1885-91; E. Yates, *Hampton Court*, 1935.

Hampton Roads, channel between Chesapeake Bay and the estuary of the James R., Virginia. Two notable naval engagements took place in H. R. during the Civil war. In 1862 the Confederate ironclad, *Virginia* ('Merrimac'), destroyed the Federal frigates *Cumberland* and *Congress*, the other Federal vessels (*Minnesota*, *St. Lawrence*, and *Roanoke*) escaping. Returning the next day to destroy these also the *Virginia* found the Federal ironclad *Monitor* awaiting her. This was the first engagement between ironclads, and the *Virginia* was forced to retire. See 'MONITOR.'

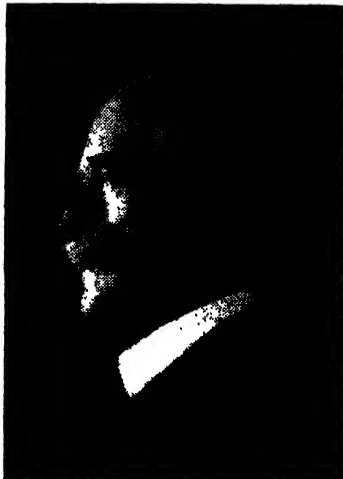
The H. R. Conference was an informal conference held in the cabin of the *River Queen*, near Fort Monroe, in 1865. It was brought about by Blair to try to arrange peace between N. and S. President Lincoln and Seward, secretary of state, represented the Federals, while vice-president Stephens, Senator Hunter, and Campbell, assistant secretary of war, represented the Confederates. Lincoln would only consider peace propositions which ensured complete restoration of the union, and accepted the emancipation proclamation. He disapproved of a joint attack upon the Fr. in Mexico, and the conference broke up without reaching any definite conclusion. See J. Davis, *Rise and Fall of the Confederate Government*, II, 1881; J. G. Nicolay and J. Hay, *A. Lincoln*, x, 1890; *Cambridge Modern History*, VII, 1903.

Hampton Wick, par. of Middlesex, England, in the bor. of Twickenham, on the N. bank of the Thames. Most of the par. is covered by Hampton Court and Bushy parks. It was formerly part of the par. of Hampton (q.v.) until separated in 1831.

Hamster (*Cricetus*), genus of rodent animals of the Muridae family. There are in all 9 species, of which the most important is the common H., occurring in certain dists. of Germany, and in parts of Europe and Asia. The H. has a stoutish

body with thick glossy coat, short legs and tail, and is about 1 foot in length. It breeds twice during the year. During the winter it hibernates, living upon its store of food, consisting of roots, grains, and fruits. This food is carried to the store in the H.'s cheek-pouches. The H. is a great pest to the farmers of the countries where it abounds, being very destructive to their crops. The male H. is very pugnacious, and will defend itself to the last gasp.

Hamsun, Knut (1859-1952), Norwegian writer, descended from peasant stock.



Courtesy Gyldendal Norsk Forlag, Oslo

KNUT HAMSDUN

He was brought up in Hamsund on the is. Hamarøy in Nordland. After running away to sea, he became successively a schoolmaster, stone-breaker, tram conductor in America, and a journalist. The pub. of his novel *Sult*, 1888 (Eng. trans. *Hunger*), caused a great sensation, even outside Norway, by its striking description of the effects of starvation and the originality of its style. His later novels are noteworthy for their intense feeling for nature (*Pan*, 1894, *Virtoria*, 1898, *En Vandrers spiller med Sordin*, 1909) and a unique sense for the irrational in human behaviour (*Mysterien*, 1892). Many deal with the lonely wanderer, misunderstood even by the one he loves. His later novels include *Den sidste Glaede*, 1912, *Landstrykere*, 1927, and the autobiographical works *I Aeventyrlande*, 1903, and *Pagienngroddet stier*, 1949. He also wrote poetry and plays. His works were trans. almost immediately into most European languages. In 1920 he was

awarded the Nobel prize for his novel *Markens Grøde* (Eng. trans. *Growth of the soil*). In 1945 he was arrested for his participation in Quisling's National-Socialist party, and thereafter lived in an old people's home in Grimstad. His *Samlede verker* were pub. in 17 vols., 1936. See W. A. Berendsohn, *K. Hamsun*, 1929; A. Gustafson, *Sir Scandinavian Novelists*, 1940; M. Blaser, *K. Hamsun*, 1943; T. Hamsun, *K. Hamsun, Min far*, 1952.

Hamtramck, city in Wayne co., SE. Michigan, U.S.A., entirely surrounded by Detroit. Factories produce automobiles, alloys, metal products, electrical supplies, machinery, roofing, paint, and varnish. Pop. 43,355.

Hamun, huge shallow trough in Seistan, on the borders of Persia and Afghanistan, is about 106 m. long. It is generally dry, except after heavy rains. Two large lakes receive the Helmund, Farrah-Rud, and Harud at the N. end. The water is for the most part salt.

Han, riv. of China, trib. of the Yangtse, which it joins at Hankow. It runs through the provs. of Shensi and Hupeh. Length 1300 m.

Han, Chinese dynasty, which was founded by Liu Pang, 202 BC, and endured till AD 220. It reigned in a period when China extended her empire at the expense of the Huns and other W. tribes, and was fruitful in works of literature, notably historical. The introduction into China of Buddhism dates from this era.

Hanaper, office in the court of chancery, now abolished, under an officer called the clerk of the 'hanaper' (Med. Lat. *hanaperium*), a wicker basket or hamper, in which writs and other documents were kept. The office was abolished in 1842.

Hanau, Ger. tn in the Land of Hessen (q.v.), at the confluence of the Kinzig and the Main (q.v.), 30 m. E. of Wiesbaden. It was founded in 1597 by Dutch and Walloon Protestant refugees, who started here woollen and silk industries. In 1813 it was the scene of a defeat of the Austrians and Bavarians at the hands of Napoleon I (q.v.). During the Second World War, in Mar. 1945, the tn and neighbouring tns were used as a lodgment area by the Amer. forces of the central group of armies previous to the advance on Kassel. There are sev. old churches and a 16th-cent. tn hall. There are jewellery and diamond-cutting industries. The brothers Grimm were b. here. Pop. 35,000.

Hancock, John (1737-93), Amer. statesman, b. Braintree, Massachusetts. President of Prov. Congress, 1774-5. President of Continental Congress, 1775-7. First signatory of Declaration of Independence. Governor of Massachusetts, 1780-5 and 1787-93. See lives by L. Sears, 1912, and H. S. Allen, 1948.

Hancock, Sir William Keith (1898-), historian and economist, b. Melbourne, and educ. at Melbourne Univ. and (as a Rhodes Scholar) at Balliol College, Oxford. He was elected a fellow of All Souls in 1923. He was prof. of modern hist. at Adelaide Univ., 1924-33, and

Chichele prof. of economic hist. at Oxford, 1944-9; in 1949 he became prof. of Brit. Commonwealth affairs at London Univ. He is a distinguished scholar on the hist. of the Brit. Commonwealth and has been consulted by the gov. on Commonwealth problems. He made his name with his brilliant and monumental *Survey of British Commonwealth Affairs*, written for the Royal Institute of International Affairs. This great work in 3 vols. (vol. i, *Problems of Nationality*, 1918-36, 1937; vol. ii, *Problems of Economic Policy*, 1918-39, in 2 parts, 1940, 1942) analysed the constitutional, racial, and economic problems of the Brit. Commonwealth in the 2 decades between the world wars. Other pubs. include *Australia*, 1930, *Argument of Empire*, 1943, *British War Economy* (with M. M. Gowing), 1949, and *Wealth of Colonies*, 1950. He was knighted in 1953.

Hancock, Winfield Scott (1824-86), Amer. soldier, b. Montgomery co., Pennsylvania. In 1844 he graduated from the U.S. military academy and served for 2 years with the Sixth Infantry in the Indian country. In the Mexican war he fought with credit, and in 1847 was made first lieutenant 'for gallant and meritorious conduct' at Contreras and Churubusco. He served successively as regimental adjutant and quartermaster from 1848 to 1855, and in that year was appointed captain and assigned duty in Florida. At the outbreak of the 'Civil war' H. was appointed brigadier-general of volunteers, and fought with distinction at Williamsburg, Fredericksburg, Chancellorsville, and Gettysburg. In 1866 he received his commission as major-general in the regular army. In 1880 he was democratic nominee for U.S. president, but was defeated. See F. A. Walker, *General Hancock*, 1894.

Hand, measurement, see METROLOGY.

Hand may be defined as a special forelimb termination distinguished by the faculty which it possesses of opposing the pollex or thumb to the other fingers, so that small articles may be grasped. The possession of 2 H.s was sufficient to classify man as a distinct order, Bimana. It may be thought that 4-handed animals (monkeys, etc.) are better equipped than man, but in reality the former lack the intricacy and delicacy of manipulation possessed by the latter, and in the case of the lower animals the forehands are needed for locomotion and support.

Bones.—The H. possesses 27 bones, viz. 8 carpals in the wrist, roughly arranged in 2 rows of 4 each; 5 metacarpals, forming the bony support of the palm; 14 phalanges of the fingers, the thumb containing 2 bones and the others 3 each.

Movements.—The muscular and nervous connections of the H. are of great intricacy. The sev. bones are strongly bound together by ligaments. The turning movements are characteristic of the forelimb. The turning of the palm downwards is termed pronation (see ARM), while supination, which is most highly

developed in man, is the turning of the palm upwards as for receiving objects. The movements are brought about by the pronator and supinator muscles assisted by the biceps muscle. The greater power possessed in supination has established the thread direction in such objects as screws, gimlets, etc. The flexing of the wrist and H. upon the forearm is brought about by the combined action of 3 muscles, while the flexing of each finger is caused by 2 muscles lying along the inner side of the digit, the deeper flexor which is attached to the first phalange passing through a perforation in the

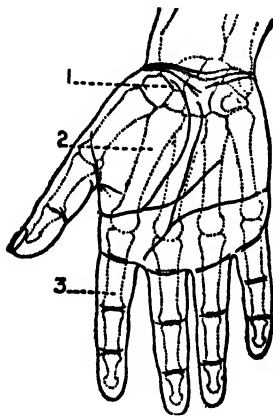


DIAGRAM OF A HAND

- 1, carpal bones; 2, metacarpal bones;
3, phalanges

superficial flexor, which is attached to the second phalange—a most ingenious contrivance.

Deformities (congenital) are fairly common in some families, and are marked by excess or lack of digits. The joints may be the seat of gout, rheumatism, or rheumatoid arthritis, while brittleness of the nails often follows serious illnesses. Right- and left-handedness are usually inherited, but may be the result of practice. An ambidextrous condition is more rare, but may be acquired. The term H. has a variety of uses in current speech, and is used technically as equalling 4 in. in horse measurement.

Hand-tree, *see* CHEIROSTEMON.

Handball: 1. For the Irish game of H., *see* FIVES. H. is also widely played in the U.S.A. in the form described below, which is somewhat similar to the Eng. game of fives. The court should be about 60 ft long and 25 ft wide, with side and front walls of about 30 ft in height. A line is drawn across the floor parallel to the front wall and 30 ft from it; this is called the 'ace line.' Nearer the front wall is

another line, called the 'over line' (or 'short' and 'front' respectively). The ball is served against the wall and, to be in play, must land between the 2 lines. The server scores an 'ace' if his opponent fails to return the ball. Should he return it, however, and the server miss in his turn, it is called a 'hand-out,' and service then goes to the other player. The winner is he who first scores 21 points or aces. The Amateur Athletic Union of the United States regulates the game in the U.S.A., and singles and doubles championships are played.

2. Game between 2 teams of 11 players each, whose object is, by catching and passing, to score by shooting the ball into the opponents' net. Next to football, H. is the most widely played game in Germany, Austria, Switzerland, and other European countries, and is played on a football field in summer and in indoor halls in the winter. The rules are basically the same as for association football, but the ball may only be caught, thrown, or punched by hands or arms, and may be carried only 3 paces by the player. The goalkeeper, however, may play the ball with any part of his body; he is the only player allowed to kick the ball, and then only in the goal circle. Penalties for fouls are free throws or corner throws. The ball is 23½ in. in circumference and weighs 15½ to 17½ oz.

Handcuffs, instruments for securing prisoners under arrest, known in the 15th and 16th cents. as swivels, or manacles. They generally consist of 2 divided metal rings, connected by a short chain, adjustable to wrists of different sizes, and of recent years sev. improvements have been made in their construction. A long chain is used to remove gangs of prisoners from one prison to another, connecting the separate H. by which each prisoner is secured, and made fast at both ends by what are known as 'end-locks.' Some H. are made so that they can be placed on the wrists and immediately secured by a single movement. There are sev. appliances of recent invention resembling H. which are employed by the police, such as 'snaps,' 'nippers,' 'twisters,' etc., differing from H. in that they are meant for 1 wrist only, the handle part being held by the officer conveying the prisoner.

Handel, George Frideric (1685–1759), Eng. composer of Ger. birth (originally Georg Friedrich Händel). *b.* Halle, of unmusical parentage, was destined for law, but showed such remarkable talent for music that he was finally permitted to adopt it for a career. He studied under the Halle organist, Zachau, and made rapid progress in composition, the organ, harpsichord, oboe, and violin. He became organist at Halle cathedral in 1702; the following year he was engaged as 2nd violin in Kneiser's opera-house at Hamburg, where in 1705 he produced his first operas, *Almira* and *Nero*. He next visited Florence, Venice, Rome, and Naples (1706–10), producing operas with considerable success. Similar good fortune awaited him in London, where he

produced *Rinaldo*, 1711. Although appointed to the court of Hanover, he returned to London in 1712, where he remained until his death, his closest friends including such men as Pope, Fielding, Arne, and Hogarth; and he was subsequently, in 1726, naturalised. The death of his admiring patron, Queen Anne, the stoppage of his pension (awarded him in recognition of his fine *Utrecht Te Deum*), and the succession as George I of the elector of Hanover, whom he had offended by leaving, caused him much anxiety; but he was restored to favour in 1715, and in 1718 he was made



GEORGE FRIDERIC HANDEL.

Engraving after a picture in the collection of Her Majesty at Windsor

chapel master to the duke of Chandos. This post he retained until 1720, composing, meanwhile, the famous serenade *Acis and Galatea*, c. 1718-20, many anthems, and some harpsichord pieces. The early version, as the masque *Haman and Mordecai*, of his first oratorio in Eng., *Esther*, was also produced with great success (1720). The year 1719 saw the foundation of an operatic company under the management of H. and his rival Bononcini; for its productions, H. wrote over a dozen operas, including *Radamisto*, 1720, *Ottone*, 1723, *Giulio Cesare*, 1724, and *Scipione*, 1726. On the company's failure (1728) H. organised a similar affair, for which he wrote many more operas or oratorios, including *Orlando*, 1733, *Arianna*, 1734, *Alcina*, 1735, *Deborah*, 1733, and *Athalia*, 1733. The failure of this venture (1737) brought on an attack of paralysis, and he was forced to go to Aachen to take the waters. Shortly after his return in 1737 he forsook opera and turned to oratorio, and from

that time until blindness overtook him (1752) he brought about, in 15 oratorios of unique, unprecedented splendour, the reformation and development of dramatic composition not designed for the stage, on which his claim to greatness principally rests, commencing with *Saul and Israel in Egypt* in 1739. The year 1742 witnessed the production at Dublin of the wonderful *Messiah*, which achieved the greatest popularity of any oratorio ever written. His chief subsequent works were *Samson*, 1743, *Judas Maccabaeus*, 1747, *Theodora*, 1750, a beautiful work which has never been appreciated, and, last of all, *Jephtha*, 1752. Although of Ger. birth, H. shows hardly a trace of Ger. influence. His style is Italian and Eng. and he is remembered purely as an Eng. composer, much as the It.-b. Lully, whose case is very similar, is regarded as purely Fr. With the exception of J. S. Bach, H. far outshone his contemporaries. For the most part he adhered strictly to accepted forms; he had an excellent sense of balance; and his sure instinct for dramatic values was a predominating feature in his operas and oratorios alike. His writings are marvellously fluent, and his skill in contrapuntal choral writing profound; his music is consequently rich in effects at once broad, massive, noble, and inspiring; the ideals of classical oratorio. H. was a very fine performer on the organ and harpsichord; and his instrumental music, such as the *Concerti grossi*, 1740, and the organ concertos, 1740, are splendid. See lives by E. J. Dent, 1934, N. Flower, 1947, and P. Young, 1947. See also W. Smith, *Concerning Handel*, 1948; and O. F. Deutsch, *Handel: a Documentary Biography*, 1955.

Handfasting (O.E. *handfaestung*), custom long prevalent in Scotland, whereby man and woman could pledge themselves to each other for a year and a day by the joining of hands. If at the end of that time the woman was neither a mother nor pregnant, the man need not make her his wife. Sir Walter Scott describes the custom in his novel, *The Monastery*. Many injunctions were directed against the custom by the clergy both before and after the Reformation.

Handicap, in games and sports, is a disadvantage placed upon the abler competitors in order to reduce the participants to approximate equality and thus afford a closer contest. H.s are an essential part of the structure of horse-racing and golf (qq.v.) and are also used in various forms in many other sports.

Handley, Thomas (1894-1949), radio comedian, b. Liverpool, at one time a commercial traveller by day and an entertainer by night. During the First World War he served with a kite balloon section of R.N.A.S. After the war he joined a concert party and appeared in a music-hall sketch, *The Disorderly Room*, which was given a place in the Royal Command Performance of 1923. His first radio engagement was in 1926, and he subsequently took part on the air in revue, vaudeville, operetta, pantomime,

and other items. The feature, however, in which he had his greatest success was 'Itma' ('It's That Man Again'—words first applied to Hitler). In this feature, through which his name became known over the whole country, he owed much to the talents of a well-chosen team, and still more to the script-writers; but the feature owed as much to H.'s outstanding personality—a personality humorous, ebullient, kindly, and sincere. His own part was that of an *enfant terrible* in a topsy-turvy world, with an outrageous assurance and an optimistic philosophy. During the Second World War and after 'Itma', typified the spirit of the British nation. H., the man to whom everything happened, who resourcefully emerged from every ordeal, whose cheerfulness, friendliness, and sanity never failed, was the man that his millions of listeners in their inmost hearts felt themselves to be. This explains his universal popularity and the grief at his sudden death. A memorial service was held at St Paul's Cathedral.

Hands, Laying-on of, religious ceremony used to accompany various sacramental and other rites. Instances of the ceremonial imposition of hands are numerous both in the O.T. and N.T., and the custom has been continued in the Christian Church. In the primitive Church it accompanied absolution and many minor blessings, etc. In the Rom. Catholic Church it forms the matter of the sacraments of confirmation (accompanied by the use of chrism) and of Holy Orders, and must be administered by a bishop, though (exceptionally in the Lat. rite, and normally in the Oriental) confirmation may be administered by a priest with chrism blessed by a bishop. The Gk Church no longer retains L. of H. for confirmation, and the Rom. Church does not make use of it in absolution. The ceremony of L. of H. is used in the Anglican Church at Confirmation, at the Ordering of Priests and of Deacons, and at the Consecration of Bishops.

Handsworth: 1. Auct par., 4½ m. SE. of Sheffield (q.v.), incorporated in the city in 1921. H. gives its name to a municipal ward; here are quarries, nurseries, and collieries. Pop. 34,703.

2. Dist. on the N. side of the city of Birmingham (q.v.), England, associated with Matthew Boulton, James Watt, and Wm Murdock. Boulton's house is now an hotel, and all 3 industrial pioneers are buried in the 500-year-old par. church.

Handwriting, see GRAPHOLOGY; WRITING.

Hangchow, cap. of Chekiang prov., China, on the Tsientangkiang, which flows into Hangchow Bay. It is the Kinsai, Kingtee, or Quinsay of Marco Polo, at the S. terminus of the Imperial or Grand Canal. In Marco Polo's day H., which he calls Kinsai, had a garrison of 30,000 soldiers and contained '600,000 families.' Noted for trade in silk manufs., fans, and gold-embroidered stuffs, and as a literary centre. The port was opened to foreign commerce, 1896.

H. was the cap. of the S. Sung dynasty, 1127–1278, and was held by the Taipings, 1861–4. Near by is the West Lake. Railways to Shanghai (110 m. distant), Ningpo, and Nanch'ang have been constructed. The estuary tides below H., causing the 'Hangchow bore,' considerably hinder navigation. During the Civil war in China H. was occupied during the Lower Yangtze campaign in 1926, and when the Nationalists made Nanking their cap. it became very important as the port of that city. Fell to the Japanese on 24 Dec. 1937. In the Civil war following the Second World War H. was abandoned by the Nationalists to Communist troops in May 1949. Pop. 840,000. See A. E. Moule, *Notes on Hangchow*, 1889; E. R. Scidmore, *China the Long-lived Empire*, 1900; and *Marco Polo* (Yule's ed.), 1874.

Hangng, see CAPITAL PUNISHMENT; MURDER.

Hangng Gardens of Babylon, building of auct Babylon famed as one of the Seven Wonders of the World (q.v.). The actual structure has not been identified, but according to Gk tradition it was a lofty terraced building planted with gardens. Since this description may refer to a *ziggurat* (q.v.) many think that the temple-tower of Babylon repaired by Nebuchadnezzar II (605–561 BC) may be meant. The H. G. could, however, have been specially erected by, or for, his queens Nitocris (later confused with Semiramis) or Amyitis, both of whom were active builders during his absence at war.

Hangng, name for birds of the subfamily Icteridae, sometimes called troupials or orioles, resembling finches. (Webster gives the scientific name as *Icterus galbula*.) They are brilliant black and yellow in colour, and good songsters, found especially in the tropical parts of South America, where the *Cassicus* and *Ostriops* genera abound, and in North America, where they are known as hang-birds in many parts. Their purse-like nests, sometimes 2 ft long, hang from branches, with an entrance near the bottom to one side. These passerine birds of America are related to the starlings and weaver-birds of the E. hemisphere.

Hangul, see RED DEER.

Hanhai (dry sea), Chinese name for a great tract of desert in central Asia. It is an area of inland drainage, divided by hills into the basin of the Tarim and the desert of Gobi (q.v.).

Hankey, Maurice Pascal Aiers (1877–), 1st Baron, Brit. soldier and gov. servant; educ. at Rugby. He joined the Royal Marine Artillery, 1895. In H.M.S. *Hamillies*, Mediterranean, 1899–1901; naval intelligence dept, 1902–6; intelligence officer, Mediterranean, 1907; secretary, Committee of Imperial Defence, 1912–38; secretary, War Cabinet, 1919–38. Retired from fighting service as Lieutenant-colonel, 1918; G.C.B., 1919. Secretary-general of Imperial conferences, 1921, 1923, and 1926. Brit. secretary, Peace Conference, 1919; Washington Conference, 1921; Geneva Conference, 1922;

and London International Conference on Reparations, 1924. Clerk of Privy Council, 1923-38. Secretary-general, London Naval Conference, 1930. Minister without portfolio in Neville Chamberlain's Cabinet, 1939; chancellor of duchy of Lancaster, 1940. Paymaster-general, 1941-1942.

Hankow, or Hankau, riv. port (since 1861) of Hupeh prov., China, at the confluence of the Han and the Yangtse. Hanyang (with large iron-works) is opposite across the Han, and Wuchang across the Yangtse. The Tayeh iron deposits near H. are among the richest in the world. Before the Second World War they were mainly controlled by Japanese and large quantities were exported to Japan. There are also deposits of gold, silver, lead, zinc, antimony, coal, salt, limestone, etc., in the neighbourhood. It was opened to foreign trade in 1862. The city was walled round in 1863. In normal times H. is the chief emporium of central China, exporting tea, antimony, ore, hides, ramie fibre, beans, silk, tobacco, wood-oil, and Chinese medicines. The railway between H. and Peking was completed in 1905, and that between H. and Canton (768 m.) in 1931. Before the Second World War there was a good daily steamship service between H. and Shanghai and a weekly one between H. and Ichang. The tn was flooded (1866, 1869, and 1870), but structures to prevent the rise of the riv. have been built along the riv. frontage of the Brit. settlement. Ever since the outbreak of revolution H. has been the scene of disturbances. In 1919 there was a tremendous increase in trade amounting to over 227½ million taels. In 1926-7 H. was occupied for some time by the first National Gov., to which the Brit. Gov. handed over the administration of the Brit. settlement. In Aug. 1938 H. was heavily bombed by Jap. aeroplanes, and on 28 Oct. Chiang Kai-shek evacuated H. After the Second World War it was taken over by the Chinese (Sept. 1945). In the subsequent civil war H. was taken by Communist forces on 16 May 1949. Since then it has merged with Wuchang and Hanyang, and forms a part of the triple city of Wuhan. See CHINA and WUHAN.

Hanley, James (1901-), novelist, b. Dublin. Leaving school at 13, he followed the sea for 10 years, then worked variously as butcher, railwayman, cook, clerk, postman, and journalist. His first book, *Drift*, was pub. in 1930, and his first real success, *Boy*, in the following year, which saw also *The Last Voyage and Ebb and Flood*. *The Furys*, 1934, together with *Secret Journey*, 1936, and *Our Time Is Gone*, 1940, make up a trilogy of Dublin slum life and show H.'s power of depicting horror and misery. Others of his novels are *The Maelstrom*, 1935, *The Wall*, 1936, *Hollow Sea*, 1938, *The Ocean*, 1941, *Sailor's Song*, 1943, *Winter Song*, 1950, and *The Closed Harbour*, 1952. *Soldier's Wind*, 1938, *Between the Tides*, 1939, and *Don Quixote Drowned*, 1953, are collections

of essays, and *Broken Water*, 1937, is autobiographical.

Hanley, centre of the potteries dist. of Staffordshire, is situated 1 m. NNE. of Stoke-on-Trent; it was made a municipal bor. in 1857, a parl. bor. with 1 member in 1885, and a co. bor. in 1888. In 1910 it amalgamated with neighbouring tns to form the co. bor. of Stoke-on-Trent. Large coal and iron mines are found in the neighbourhood, and extensive steel and iron industries are carried on. The manuf. of earthenware, for which the tn is famous, includes the finest kinds of porcelain. H. is the bp. of Arnold Bennett (q.v.) the novelist. Pop. 53,810.

Hanna, Marcus Alonzo (1837-1904), Amer. politician and steel and coal magnate, b. Lisbon, Ohio. He was a delegate to sev. national Republican conventions, and was instrumental in securing the election of McKinley. Chairman of National Republican Committee, U.S. senator, 1897-1904. During the term of President McKinley he was the most powerful politician in the U.S.A., and was at one time talked of as the Republican nominee for president.

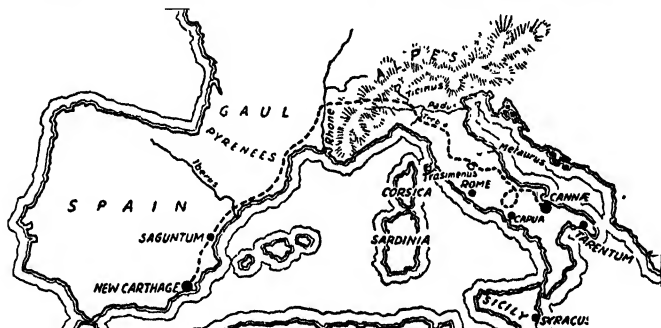
Hannah, wife of Elkanah the Ephraimite (1 Sam. i), to whom, in response to prayer, a son, Samuel, was given. She had vowed to devote her son to the Lord, and so the child was taken to the temple at Jerusalem. With the hymn of thanksgiving, 1 Sam. 2, compare the *Magnificat*.

Hannay, James Owen (1865-1950), novelist who used the pen-name George A. Birmingham, b. Belfast, son of a clergyman. Educ. at Haileybury and Trinity College, Dublin, he took orders in 1889. He was a curate in Wicklow, rector in Mayo, in 1901 a lecturer at Dublin Univ., from 1912 to 1921 a canon of St Patrick's Cathedral, from 1924 to 1934 rector of Mells, and finally at Holy Trinity, Kensington. His first book was *The Spirit and Origin of Christian Monasticism*, pub. under his own name in 1903. *Spanish Gold*, 1908, estab. him as a novelist of Irish life with a racy humour all his own. Among the best of his other novels are *Lalage's Lovers*, 1911, *The Major's Niece*, 1911, *The Inviolable Sanctuary*, 1912, *Good Conduct*, 1920, *Goodly Pearls*, 1926, *Fidgits*, 1927, *Fed Up*, 1931, *Angel's Adventure*, 1933, and *Good Intentions*, 1945.

Hannibal (247-c. 183 B.C.), celebrated Carthaginian general, the son of Hamilcar Barca (q.v.). He was educ. in his father's camp, and trained in all the arts of military warfare. He was taken to Spain when only 9 years old, and there upon an altar made an oath to his father of eternal hostility to Rome. On his father's death (229 B.C.) Hasdrubal (q.v.), the son-in-law and successor of Hamilcar, placed him in command of the troops in Spain, and in 221, on the assassination of Hasdrubal, he was unanimously proclaimed commander-in-chief by the soldiers. This appointment was later ratified by Carthage. H. crossed the Tagus and subdued the Celtiberian tribes, and before 219 he had reduced all the country

S. of the Iberus, with the exception of Saguntum. In the spring of that year he laid siege to Saguntum, which surrendered after a resistance of 8 months. The Romans, having made an alliance with that city, regarded H.'s action as an intentional provocation to war, and demanded his surrender, which, being refused, war was formally declared between the two nations. H. prepared his army in the winter of 219, and left Spain in the following spring with some 90,000 foot, 12,000 horse, and 50 elephants (Polybius, iii. 34, 18). In the early summer he performed his brilliant march across the Alps, and on reaching N. Italy defeated P. Cornelius Scipio on the Ticinus and again on the Trebia. After spending some months in winter quarters in N. Italy, he marched

approached with his troops from Spain, but at the R. Metaurus met the Rom. army under C. Claudius Nero and M. Livius Salinator, and was slain with most of his men (207). H. maintained his ground in the wild, mountainous region of Bruttium from 207 to 203, in which year he was recalled to Africa in order to oppose Scipio Africanus. In 203 he met Scipio at Zama, where he was defeated for the first time. He urged his countrymen to make peace with Rome and himself signed the treaty whereby Carthage undertook not to wage war outside her own dominions without permission from Rome (201). The Romans continually urged the banishment of H., and it was felt in Carthage that he and his family were too great for the state. In 195,



THE ROUTE OF HANNIBAL

into Etruria early in 217 to the banks of the Arno. The Carthaginian army endured great suffering from the unwholesome swamps, and H. himself lost the sight of one eye. The Rom. army under Gaius Flaminius was encamped at Arretium, which H. passed by on his way S. Flaminius hurried in pursuit and fell into an ambush near Lake Trasimene, the Romans being practically wiped out, and the consul slain. Rome now elected dictator Q. Fabius Maximus, who, on account of his caution, won the name of 'Cunctator.' He continually harassed the Punic forces, without risking a general engagement. H. marched S. to Capua and into Apulia. In 216 he encountered L. Aemilius Paulus and C. Terentius Varro, and inflicted a crushing defeat upon the Romans, on the r. b. of the Aufidus, below Cannae. He wintered in Capua, and sev. other S. tns revolted from Rome to his side. It has been said that the luxury prevailing in Capua enervated his troops; whether this be true or not, the year 216-215 marks the turning-point of his career. H. obtained some successes in the S., taking Tarentum in 212; but he did not feel himself strong enough to attack Rome itself until his army was reinforced. His brother, Hasdrubal (q.v.),

compelled by the jealousy of factions at home as well as by the enmity of Rome, he sought refuge with Antiochus the Great, king of Syria, who was allied with Egypt against Rome. Antiochus was defeated at Thermopylae (191) and at Myonesus (190). He sued for peace, which was granted; but the terms included the surrender of H., who escaped his doom by fleeing to the court of King Prusias of Bithynia. In 183 Rome sent T. Quintus Flaminius to demand the surrender of the fugitive, and H. took poison. He ranks among the great commanders of hist. His army was composed of mercenaries of many nationalities—Africans, Spaniards, Gauls, and Italians—yet he retained their confidence during 16 years of hardship and privation in a foreign land, without a single mutiny; and long after the veterans that had followed him over the Alps had dwindled to a mere remnant, his new levies were still as invincible as his predecessors. See W. Morris, *Hannibal*, 1897; A. R. Bonus, *Where Hannibal Passed*, 1925; E. Groag, *Hannibal als Politiker*, 1929; and G. P. Baker, *Hannibal*, 1930.

Hannibal, city in Missouri, U.S.A., on the Mississippi R. (bridged) 100 m. NW. of St Louis in grain and dairying area.

It is a railway centre and was formerly an important riv. port. It manufs. shoes, cigars, cement, and steel, lumber, and metal products. H. was the boyhood home of Mark Twain (see CLEMENS, S. L.). Pop. 20,400.

Hanno (1 c. 500 BC), Carthaginian navigator. The extant *Periplus* attributed to him is believed by some to be a Gk trans. of a Punic original which H. is known to have compiled. It describes a voyage along the W. coast of Africa for the purpose of exploration and navigation. See the ed. with trans. by T. Falconer, 1797.

Hanno the Great (fl. 3rd cent. BC), leader of the peace party at Carthage, and an opponent of Hamilcar and Hannibal. He was unsuccessful in his command over the rebellious Carthaginian mercenaries (241 BC), and after the battle of Zama (202 BC) went on a deputation to Scipio to sue for peace.

Hannover, see HANOVER.

Hanoi, cap. of the Democratic Rep. of Viet Nam (q.v.), cap. of the prov. of the same name, and chief city of Tonking (q.v.). H. stands on the r. b. of the Red R. (q.v.) about 60 m. from Haiphong. The Vietnamese quarter is anct. and H., under different names (Thang-long, Ke-cho, etc.), was for centuries cap. of Viet Nam. Remains of old imperial palaces and citadels are to be seen. The European quarter is modern, being built at the end of the 19th and during the 20th cents. by the Fr. H. is connected with Haiphong by rail, road, and water, the rail and road routes crossing the massive Pont Doumer (q.v.) and with S. China by rail. It has a modern airport, Gia-lam, on the l. b. of the Red R. which was built by the Fr. The European quarter has broad, tree-lined boulevards, impressive public buildings, and comfortable villas. In the Vietnamese quarter artisans are grouped in streets (e.g. Street of the Silversmiths, etc.). Under the Fr. protectorate H. had a univ., hospitals, a museum, a Fr. lycée, primary and secondary schools, a large theatre, and the Fr. School of Far Eastern Studies. There were sev. good hotels and a tramway service. To-day H., as cap. of the rep., accommodates gov. ministries, the H.Q. of mass organisations, and a number of embassies from Communist countries. A new, Communist univ. has been founded, and there are primary and secondary schools, the teaching being in Vietnamese. The tramways, railways, and airport still operate, but motor traffic has almost disappeared. All European commercial companies have withdrawn from H. and almost all the Vietnamese shops and businesses have closed. There are no recent pop. figures, but the pop. is probably above 500,000.

Hanotaux, Albert Auguste Gabriel (1859-1944), Fr. statesman and historian, b. Beaufort, educ. at St Quentin College. He attracted the attention of Gambetta by an article in *La République française*, obtaining a post in the Foreign Office, and later in the Cabinet. He was

deputy for Aisne, 1886-9, and minister for foreign affairs, 1894-5 and 1898-9. H. opposed Brit. policy in Africa, and did much to bring into being the alliance with Russia. His publs. include *Études historiques sur les XVI^e et XVII^e siècles en France*, 1886, *Histoire du cardinal Richelieu* (vols. I and II), 1893-1903, which won the Gobert prize, and *Histoire de la nation française* (15 vols.), 1920-4.

Hanover: 1. (Ger. Hannover) Former kingdom in N. Germany, which became a prov. of Prussia (q.v.) in 1866. It is now part of the *Land* of Lower Saxony (q.v.). H. lay between Holland on the W., the Elbe on the E., the North Sea on the N., and Westphalia and Brunswick (q.v.) on the S. The S. of the country was mountainous; elsewhere H. was flat with large stretches of moor and heath, including the great Lüneburg (q.v.) Heath. It was watered by the Weser, Elbe, Ems, and Leine. Agriculture was well developed, iron and steel goods, textiles, chemicals, and paper were manufactured, and mining was carried on in the Harz Mts (q.v.). Area 14,976 sq. m.; pop. (1939) 3,211,000. In 1569 the duchy of Lüneburg (part of the original Brunswick-Lüneburg ter.) was divided into the duchies of Lüneburg-Celle and Dannenberg. Later the other Brunswick possessions were re-united, and, on the extinction of the ruling dynasty in 1634, were divided between the 2 Lüneburg duchies. The Lüneburg-Celle family adopted the title of Brunswick-Lüneburg—more popularly called 'Hanover,' from the cap. George Louis, elector of H. after 1708, succeeded to the Eng. throne in 1714 as George I. During the Napoleonic wars H. became part of the kingdom of Westphalia, but in 1815 it was made a kingdom itself. In 1837, when Victoria became queen of England, H. passed to the nearest male heir, her uncle, Ernest Augustus, duke of Cumberland. In 1866, having sided with Austria against Prussia, H. was incorporated in Prussia after the defeat of its army at Langensalza. After the Second World War, H. and adjoining ters. became the *Land* of Lower Saxony.

2. City of N. Germany, cap. of the *Land* of Lower Saxony, and former cap. of the prov. of H. It stands on the Rs. Leine and Ihme. It was made a city in 1203, but was not of any great importance until it became the cap. of a duchy (see 1 above); later it was the centre of the Guelph movement (see GUELPHS AND GIBELINES). For some 120 years after the accession of the elector of H. to the Eng. throne in 1714, the city was strongly influenced by Eng. life. During the Second World War it suffered severely in air-raids and in the fighting immediately before its capture by the allied armies in 1945. Since the end of the war, however, there has been a great deal of reconstruction; many anct. monuments which were in ruins in 1945 have been restored, and new buildings have appeared in all parts of the city in place of those destroyed. Among the anct. buildings of interest are

the 14th-cent. Marktkirche, and the 17th-cent. Leine castle and Ballhof. In the W. is the Guelph Herrenhausen castle (now a technical college) with remarkable baroque gardens. There is a veterinary college, an opera house, and an extensive exhibition ground, where the Ger. Industries Fair is held in the spring. The harbour on the Mittellandkanal (q.v.) is busy, and there are rubber, linen, silk, locomotive, motor-car, chocolate, and biscuit industries. Pop. 519,600.

3. Bor. in York co., Pennsylvania, U.S.A., 42 m. NW. of Baltimore. It is served by the Pennsylvania and W. Maryland railways, and manufs. machinery, shoes, clothing, pretzels, furniture, and cigars. It is surrounded by a rich agric. region. H. was incorporated as a bor. in 1815. Pop. 14,048.

Hanság, see NEUSTEDLERSEE.

Hansard, Luke (1752-1828), printer, b. Norwich, and educ. at Kilton-in-Holland, 4 m. from Boston. He came to London and entered the office of John Hughes, printer to the House of Commons, as compositor. In 1774 he became a partner and acting-manager, and began to print the Jours. of the House of Commons. Subsequently his 2 sons entered the business, and after their father's death they and their sons continued as printers to the House of Commons. Luke H. was buried in the par. church of St Giles-in-the-Fields.

Thomas Curson Hansard, who had opened his own printing office in 1803, printed *Cobbett's Parliamentary Debates* (founded 1804) and became the owner of that pub. in 1811, renaming it *Hansard's Parliamentary Debates*. T. C. H. d. in 1833, and was succeeded by his son, T. C. H. the second. The name *Hansard* disappeared from the *Parliamentary Debates* in 1889, when T. C. H. sold his interest to the Hansard Publishing Union (Bottomley). The *Official Report* of parl. debates reverted to its old name of *Hansard* in 1943 as the result of the recommendation of the House of Commons' Select Committee on Pubs. and Debates Reports, which, in a special report, stated that the committee passed a resolution that 'the word *Hansard* should appear upon the title page of the *Official Parliamentary Debates*.' But irrespective of this reversion, the *Debates* or *Official Report* had for years been known simply as 'Hansard,' the name being looked upon as a synonym for reports of parl. debates, a fact which is illustrated by the analogy of colonial debates, which in at least eight of the dominions and colonies are known as *Hansard*. It was laid down by the Select Committee that *Hansard* is not a gov. pub.; it is controlled by a sessional committee in consultation with the Speaker and Clerk of the House. See *Trewin and King, Printer to the House*, 1952.

Hanseatic League, medieval federation of N. Ger. cities which for centuries was of great commercial and political importance. Germany's foreign trade dates from very early times: In England, for example, Ethelred II (978-1016) granted to 'the emperor's men' equality with Eng.

merchants in trading privileges, and a 'Gildhalla Teutonicoorum' was estab. in London by Rhineland merchants under Henry II. The rent of this guildhall (3 shillings per annum) was remitted by Richard Cœur de Lion as an acknowledgment of the reception given him at Cologne on his way home from captivity. While the Cologners thus prospered in England, other Germans were busy elsewhere. Early in the 13th cent. Wisby (in Gothland) was the centre of a mercantile association which monopolised the Baltic trade, and extended its operations eastward to Novgorod and westward to England. In 1241 Hamburg and Lübeck formed a league to protect themselves against pirates, robber barons, and the tolls and exactions of feudal nobles. They were joined by other cities, and the H. L. (*Hansa*, a defensive alliance) soon absorbed the Wisby association, and not only became paramount in the Baltic, but rivalled the Cologners in England, obtaining from Henry III permission to found a new settlement in London. After some years of contention the rivals amalgamated, and their Stalhof, or Steelyard, became the centre of London's commerce, the Cologners retaining the chief interest. In Germany the league made Lübeck its cap. city; all disputes were referred thither, and from 1260 onward a diet was held there every third year. About 85 cities joined the *Hansa*, and were arranged in 4 dists. with Lübeck, Cologne, Brunswick, and Danzig as their centres. There were 4 great 'factories' at London, Bruges, Bergen, and Novgorod, of which Bergen was said to be more German than Norwegian, Bruges more Hanse than the Hanse tns, and in London the Gildhalla, lending money to Edward III and other kings, received from them valuable privileges and monopolies which led to serious quarrels with Eng. merchants, especially as the latter had no corresponding advantages abroad. About the time of Henry VII the league export of Eng. cloth was 40 times greater than that sent out in Eng. ships. During the 14th and 15th cents. the *Hansa*, though never formally recognised by the empire, was stronger than most of the rulers with whom it had dealings. It had its own financial system and courts of justice, enforcing its decrees by fines, and, if necessary, by war. Strict discipline was maintained among its members, any recalcitrant city being liable to exclusion. Some monarchs who defied it were overwhelmed; for example, Waldemar of Denmark (1369). But sev. causes gradually tended to weaken its power: the discoveries of Columbus and Vasco da Gama diverted the course of trade, the Baltic fishery declined, and political changes in Germany made princes stronger and cities weaker. The Dutch, after a hard fight, secured much of the Baltic and North Sea trade, and S. Germany competed for inland commerce, while the London monopoly, already in fact broken by the activities of rival Eng. merchants, was formally abolished by Elizabeth in 1598.

The Thirty Years War (q.v.) broke the remaining power of the league, and the ruin was completed by a disastrous Scandinavian war, after which it was finally dissolved.

Hansen, Hans Christian (1906-), Dan. politician. He trained as a compositor and became prominent in the Social Democratic party. H. was party secretary, 1939-41 and 1945, and chairman, Socialist Youth International, 1935-9. He was a member of the Folketing (Parliament), 1936; minister of finance, May-Nov. 1945 and 1947; minister of commerce, 1950; minister for foreign affairs, 1953-5; and Prime Minister and minister for foreign affairs, 1955. H. remained Prime Minister after the general election of 1957.

Hansom, Joseph Aloysius (1803-82), Eng. architect and inventor, was the son of a joiner, to which trade he himself was at first apprenticed. Showing an aptitude for design, he became assistant to a York architect; afterwards he entered the profession himself and designed many important buildings, chiefly Rom. Catholic churches. The Birmingham tn hall is his work. His name is remembered as the inventor of the patent safety cab, for which he received only £300.

Hansom Cab, see CAB.

Hansson, Ola (1860-1925), Swedish st. novelist, and critic, b. Höningsåsa in Sweden. His early poetry, such as *Nothurns*, 1885, describes the beauty of the S. plains. His work includes some excellent criticism: *Der Materialismus in Literatur*, 1892, and *Scher und Deuter*, 1894; he also wrote *Friedrich Nietzsche*, 1890; *Fru Ester Bruce*, a novel, 1893; and *Young Oleg's Milies*, trans. into Eng. by George Egerton, 1895. See E. Ek, O. Hansson, 1925; E. Ekelund, O. Hansson's ungdomsdiiktning, 1930.

Hansteen, Christopher (1784-1873), Norwegian astronomer and physicist, b. Christiania (Oslo). He is noted for his researches in connection with terrestrial magnetism, and in 1816 he was appointed to the chair of astronomy and applied mathematics at the Christiania Univ. Later he was made director of a new observatory that had been built at Christiania (1833), and to which he had a magnetic observatory added in 1839. He superintended the trigonometrical and topographical survey of Norway which was started in 1837.

Hanthawadi, or **Hanthawaddy**, dist. in Lower Burma in Pegu div.; forms part of the valley of the Rangoon R. There are important oil refineries at Syriam. Rice is the chief product of the region. The cap. is Rangoon, although Rangoon is not part of the dist. Pop. 492,000.

Hants, see HAMPSHIRE.

Hanuman, see ENTELLUS MONKEY.

Hanumān (having large jaws), in Hindu mythology, the monkey-king, conspicuous figure in the epic *Ramayana*. He is sometimes called son of Pavana (god of the winds), and was said to have colonised much of the Deccan with his followers. The Sanskrit drama *Hanumannataka*, 10th or 11th cent., deals with his adventures.

Hanway, Jonas (1712-86), philanthropist, b. Portsmouth. He amassed, as a merchant, a considerable fortune during the acquisition of which he travelled extensively in Russia and Persia. At the age of 38 he retired from trade, settled in London, and pub. an account of his travels, 1753. He now interested himself in social questions, and as a reward for his efforts in this direction he was, in 1762, appointed commissioner of the victualling office. In 1766, with the co-operation of Sir John Fielding and others, he founded the Marine Society, which was of great use in attracting recruits for the navy. Two years later he became a governor of the Foundling Hospital, and in the same year was instrumental in instituting the Magdalen hospital for the rehabilitation of fallen women. He is said to have been the first Londoner habitually to carry an umbrella. He was a voluminous writer. A monument to his memory is in Westminster Abbey, and Hanway Street, London, W.1, is named after him. See biographies by J. Pugh, 1787, 1798, R. E. Jayne, 1929, and J. H. Hutchins, 1940.

Hanwell, see EALING.

Hanyang, city in China, in the prov. of Hupeh, on the S. bank of the Han R., opposite Hankow. It formerly had an arsenal, steel works, and glass factories, besides a smokeless powder factory. With Wuchang and Hankow it forms the triple city Wuhan (q.v.).

Haparanda (Aspen coast), seaport tn in Sweden in the prov. of Pitea, on the N. shore of the Gulf of Bothnia. Opposite is the Finnish tn Tornio. It has considerable trade, and has a meteorological station. Pop. 3162.

Hapsburg, or **Habsburg**, former imperial house of Austria-Hungary, called from the ancestral castle on the R. Aar in the Swiss canton of Aargau, built in the 11th cent. by Bishop Werner. At a later period the owners of H. became counts of H., and by degrees extended their ters. The first distinguished member of the race was Count Albert IV, whose son, Rudolf, became emperor in 1273, and it is to this line that the historical fame of the house is almost entirely due. Rudolf, Ger. emperor, or holy Rom. emperor, was founder of the house that ruled as dukes of Austria, and after 1437 the H. of Austria, up to and including Charles VI. was also always holy Rom. emperor. On the death of Charles VI in 1740 his daughter, Maria Theresa, who succeeded him, married Francis of Lorraine, chosen holy Rom. emperor in 1745, and the house of Hapsburg-Lorraine continued to provide emperors till 1806 when, with the estab. of the new empire, the title of holy Rom. emperor was changed for that of emperor of Austria. (Between 1742-5 Charles VII of Bavaria was theoretically holy Rom. emperor, though his authority was virtually non-existent; he is the only non-Hapsburg holder of the office between 1438 and 1806.) A Sp. dynasty was also descended from the Emperor Rudolf, beginning with the Emperor Charles V, who united Spain to the H. dominions,

but in 1556 it was again placed under a separate (though H.) ruler, and a further attempt to place an Austrian H. on the Sp. throne after the death of Charles II in 1700 met with no success, the Bourbons then succeeding in Spain. The H. dynasty was deposed after the First World War. *See also* AUSTRIA-HUNGARY and HOLY ROMAN EMPIRE. *See E. von Glaise-Horsteneu, The Collapse of the Austro-Hungarian Empire, 1930; Princess Fugger, The Glory of the Hapsburgs, 1932; and A. J. P. Taylor, The Habsburg Monarchy, 1941, 1948.*

Hara, Takashi (1856-1921), Jap. statesman, b. Morioka. Studied law, but embraced journalism, to which he returned sev. times in his career. In 1886, chargé d'affaires, Paris. Minister, Korea, 1896-7. Minister of communications, 1900-1. Representative of Morioka in Parliament from 1902. Sev. times minister for home affairs. Visited America and Europe, 1908. Became premier of Liberal gov., Sept. 1918. He was assassinated by stabbing at Central railway station, Tokyo.

Harafuras, *see* ALFURAS.

Hara-kiri, method of suicide which became customary among the Jap. Samurai (q.v.) class during the Middle Ages. About 5 centuries ago it was recognised as a natural institution, and was either voluntary or obligatory. A Samurai might choose this death rather than allow himself to be captured or disgraced; or he might receive intimation from court that he had incurred the death penalty for some offence, but was permitted to avoid the dishonour and indignity of a public execution by disembowelling himself with the dagger which accompanied the message. The method is as follows. Being dressed in pure white (formal kimono), and squatting upright, the suicide takes the dagger in his right hand, and cuts open his abdomen horizontally from left to right, with an upward turn. Then he pulls out the dagger and cuts the carotids, or stabs himself in the throat. When a witness is present, the suicide is beheaded just after the disembowelling. As H. requires extraordinary self-possession and determination, it was regarded as proof of innocence, or at least of a sense of honour. Self-immolation on the death of one's lord was strictly prohibited by the Tokugawa Gov. in 1668; but H. has continued to be practised in other circumstances, and in the Second World War a number of Jap. officers chose death by H. rather than surrender.

Harald, *see* HAROLD.

Harappa, ant. city of the Punjab, India, *see* INDUS VALLEY CULTURE.

Harar, *see* HARRAR.

Harbin, cap. of the prov. of Heilungkiang, China, on the Sungari R., 325 m. NE. of Mukden. It is situated at an important junction of the Siberian railway, after the construction of which it made great progress. It has been developed into an important industrial city with machine-tool factories and light

industry. Known as the 'Moscow of the East,' its pop. has increased from 800,000 in 1949 to 1,800,000 in 1956.

Harbledown, par. and vil. in Kent, England, 1 m. W. of Canterbury, formerly a well-known resting-place for Canterbury pilgrims. It contains an almshouse, formerly a hospital founded by Lanfranc for lepers; close by is the old church of St Nicholas. Pop. 1500.

Harborough, *see* MARKET HARBOUROUGH.

Harbour (Middle Eng. *hereberge*, from *here*, an army, and *beorg*, shelter; same derivation as Fr. *auberge*, an inn), sheet of water, protected from the action of wind, etc., on the waves, and designed for the protection of ships. All H.s may be classified either as havens for the protection of ships in storms, or as ports for commercial purposes; according to another classification all H.s are either natural or artificial.

Natural Harbours, as their name implies, are those H.s sufficiently protected by their situation, without needing any artificial aid. In determining the value of such H.s the geological and other physical peculiarities of the shore, the strength, direction, and range of tides, the depth of water in the protected area, the angle at which the heaviest waves impinge on the coast-line, the slope of the foreshore, and the width and shape of the entrance must all be taken into account. Among the natural H.s it is only possible to mention a few typical instances: Sydney H. extends 13 m. inland, with a coastline of 188 m. and an area of 21 sq. m.; geologically it is a 'drowned valley,' the depth of water ranging from 30 ft at the wharves to 80 ft at the heads; the bay of Rio de Janeiro is one of the largest natural H.s of the world, being 15 m. in length, from 2 m. to 7 m. in width, protected by headlands on either side, and having an entrance almost 1 m. in width; New York H. is protected by Long Is., as Southampton Water is sheltered by the Isle of Wight, both being very good H.s; Milford Haven ('haven' having the same significance as 'harbour') has a minimum depth of 8 fathoms, and combines facility of entrance with perfect security. At various places there are large enclosed areas which have openings to the sea, but these are as a rule very shallow, save in the main channels, and access is usually rendered difficult by the bar which forms at the mouth, where the ocean checks the outgoing current of the riv. Among such H.s may be named Venice, Poole, Wexford, and those at the mouths of various rivs.; in many cases works have been carried out to prevent deterioration and increase the depth, when the H.s more properly come into the category of artificial H.s.

Artificial Harbours are those in which the natural resources of the coast are supplemented by breakwaters. Generally a H. is formed where shelter is provided to a certain extent by the natural configuration of the land, but requires to be made complete by one or more breakwaters. Where the exposure is from one direction only,

and some shelter is given by a projecting headland, one breakwater at right angles to the shore, curving inwards slightly at its extremities, may be sufficient, as is seen at Newhaven. As a rule some abrupt projection from the coast is utilised to provide shelter from one quarter, and breakwaters enclosing the site complete the protection, as at Colombo. Naval H.s., which are required by maritime powers as stations for their fleets, and dockyards for the construction and repair of ships, generally come within the class of artificial H.s. The Dover H. is purely artificial, for instance, the length of the breakwater being over 2 m. The Takoradi H., in Ghana, built since the First World War, is a good instance of engineering skill triumphing over difficulties, though all precautions have to be taken to prevent silting up at the entrance. See also ARROMANOHES, HARBOUR OF.

Harbours of Refuge.—All H.s. can of course be used as H.s. of refuge when a ship is in need of shelter, but some H.s. are built more for the purpose of protection than for anything else. A refuge H. is occasionally constructed where a long expanse of stormy coast, which is near some route of ships, is without any natural shelter. In such cases breakwaters are carried out from the shore at a considerable distance apart, and converge to a central entrance of suitable width to form the required shelter. Easy approach and a safe entrance, combined with good anchorage, are requisite for a H. of refuge.

Commercial Harbours are those designed primarily for commercial uses. On important trade routes commercial H.s. must be provided for the formation of ports within their shelter, or for the protection from the sea of the approaches of ports near the sea coast, or on large rivers. A greater latitude may be observed in the selection of a site for a H. of refuge or for a naval H. than for a commercial H. The docks of a commercial H. keep the water at the same level for the discharge of cargo, etc. A good commercial H. should have an ample supply of machines for the removal and transport of goods, plenty of quay space, good warehouse accommodation, and navigation aids. By radar aid vessels, suitably equipped, may be brought into harbour in dense fog, and loud-hallers, with a considerable range, may be used to give instructions.

Situation of Harbours, etc.—When the exposure of the H. is great, as when it is situated on a regular coastline, it is essential that there should be either a considerable internal area, or a separate basin opposite the entrance to the inner basin, for the waves to spend their force. If possible such a basin should enclose a portion of the original shore for the waves to break upon; if this is impossible there should be a flat talus wall of a slope of at least 3 or 4 to 1. The same points which determine the value of a natural H. (see above) must be studied in the case of an outer H.: the direction of the entrance in relation to the line of maximum exposure, etc. Thomas Stevenson drew up a

formula for determining the reduction produced in the enclosed area of waves at any given distance not exceeding 50 ft from the entrance:

$$\frac{1}{\sqrt{B}} - \frac{1}{50} \left(H + H \frac{\sqrt{b}}{\sqrt{B}} \right) \frac{4}{\sqrt{D}}$$

H = height of wave at entrance; b = breadth of entrance; B = breadth of H. at place of observation; D = distance from mouth of H. to place of observation; x = height of reduced wave at place of observation; all in ft. If H is said to be equal to unity, then x equals a fraction representing the reductive power of the H.

In order to render tranquil H.s. of small reductive power, logs of timber called booms are used. Their heavy ends are secured by projecting into grooves cut in each side in the masonry; and they are warped down or fixed with an iron hasp at the coping course, in order to prevent the swell entering the H. from underneath. Thus a temporary wall is formed which checks the waves and prevents them from spreading into the interior basin. For further particulars on various points see PIER; BREAKWATER; DOCK; COAST PROTECTION. See also 'Researches in Hydrodynamics,' *Transactions Royal Society of Edinburgh*, xiv, 1837; Sir J. Rennie, *Theory of the Formation and Construction of British and Foreign Harbours*, 1854; T. Stevenson, *Design and Construction of Harbours*, 1874; B. Cunningham, *Dock and Harbour Engineers' Reference Book*, 1923, and *Harbour Engineering*, 1928; E. C. Shankland, *Modern Harbours*, 1926, and *The Dredging of Harbours and Rivers*, 1931.

Harbour Grace, Newfoundland, is situated W. of Conception Bay and 26 m. S. by W. of St John's, with which it is connected by riv. It does considerable trade in furs, fish, seal-skins, and cod-oil. Pop. 2524.

Harbours, Prefabricated, see ARROMANOHES.

Harburg, Ger. tn in the Land of Hamburg, on the Elbe (q.v.). It is a S. suburb of Hamburg (q.v.) city, and has important rubber and oil industries. Pop. 110,000.

Harcourt, Lewis Vernon Harcourt, 1st Viscount (1863-1922), politician, b. London, eldest son of Sir Wm V. Harcourt, and educ. at Eton. He acted for many years as his father's private secretary. In 1904 he was elected as Liberal member for NE. Lancs (Rossendale). In Campbell-Bannerman's ministry, 1905-6, he was first commissioner of works; and he entered the Cabinet still holding that office, in 1907; he retained it in Asquith's first Cabinet, 1908, and in 1910, and then was promoted to the secretaryship of state for the colonies. He was first commissioner of works again, 1915-16; raised to the peerage, 1917. He was a keen opponent of woman's suffrage.

Harcourt, Sir William George Granville Venables Vernon (1827-1904), statesman, b. York, and educ. at Trinity College, Cambridge. He was called to the Bar, took silk in 1866, and was appointed

Whewell prof. of international law at Cambridge, which position he held from 1869 until 1887. As a Liberal, he entered Parliament in 1868. Five years later he became solicitor-general in Gladstone's administration, and was knighted. In the following year Disraeli came into office, and H. was in opposition. When Gladstone returned to office H. became home secretary. In 1886 he became chancellor of the Exchequer, and was generally looked upon as being Gladstone's successor; but in 1894 Rosebery succeeded Gladstone as prime minister, and though H. served under him faithfully he must have been bitterly disappointed. After 1898 he retired from politics. He was a brilliant speaker, and is famous for his remark (1892), 'We are all Socialists now,' and for his budget of 1894 which introduced graduated death-duties.

Hard Labour, see PRISONS.

Hard Spelter, see SPETER.

Hardanger Fjord, inlet, 68 m. long, on the SW. coast of Norway in the prov. of



Norwegian State Railways

VÖRINGFOSS WATERFALL, HARDANGER DISTRICT, WEST NORWAY

Hordaland; its greatest breadth is 3 m., but some of its branches are considerably narrower. The H. Fjell stretches away to the NE., and the scenery throughout the whole length of the fjord is magnificent, including many cataracts like the Vöringfoss. The many islets and peninsulas divide the opening into various branches, such as the Sörfjord, Osefjord, Åkråfjord, Graverfjord, and Maurangerfjord. See also NORWAY.

Harden, Maximilian (1861-1927), Ger. journalist, b. Berlin. In 1892 he founded the weekly *Die Zukunft*, which ran for 30

years. During the First World War he pub. some daring articles in this periodical, notably one eulogising the Brit. effort in the Gallipoli campaign (trans. in *Foreign Opinion*, 1915). Through H.'s attack on court corruption Prince Eulenburg had to leave the country, 1907.

Hardenberg, Georg Philipp Friedrich von, see NOVALES.

Hardenberg, Karl August von, Prince (1750-1822), Prussian statesman, educ. at Leipzig and Göttingen; in the service of Hanover and Brunswick, 1770-92. In 1792 he became a Prussian minister of state under Frederick William II, helping to conclude peace between Prussia and the Fr. Rep. at the conference of Basel, 1795. Under Frederick William III he became foreign minister. His policy was to oppose Napoleon, and he allied with Russia (1805), but was soon driven from power (1806). In 1810 he became chancellor, and carried on the policy of moderate domestic reform begun by Stein. H. took part in the war of liberation, and signed the first treaty of Paris, 1814. He was plenipotentiary at the congress of Vienna, 1815, and became president of the State Council, 1817. See life by H. von Richthofen, 1833.

Hardenberg: 1. Small tn, in the Netherlands, situated on the R. Vecht, in the prov. of Overijssel. Pop. 20,800.

2. See NEVIGES.

Harderwijk, fishing port in the prov. of Gelderland, Netherlands, situated on the SE. shore of the IJsselmeer, 31 m. E. of Amsterdam. It was a Hanseatic tn, and from 1643 to 1813 the seat of a univ. The draining of parts of the IJsselmeer caused H. to decline in importance. Herring-curing is the chief industry, and agriculture is carried on. Ger. resistance in N. Holland collapsed before the Canadian Army in April 1945, the whole area, apart from a small tip in the NE., being cleared as far S. as H., on the E. shore of the IJsselmeer by 21 April. Pop. 15,500.

Hardhead (North Amer. fish), see MENHADEN.

Hardicanute, or Harthacnut (c. 1019-42), king of England and Denmark, son of Canute and Emma of Normandy. On the death of his father the Eng. Crown was seized by his illegitimate half-brother, Harold. For 3 years events in Scandinavia kept H. from England, and then, while he was collecting an invading army, Harold d., and H. peacefully succeeded (1040). His reign was cruel and oppressive. He burnt the city of Worcester for rebelling against an excessive tax. While present at a marriage feast he was seized with a fit and d. a few days later.

Hardie, James Keir (1856-1915), miner, journalist, and politician, b. of working-class parents in Ayrshire. He had no schooling, but learned to read at home. At 8 years old he was doing odd jobs, and at 10 was working in a pit. At first a Liberal, he soon became a convinced Socialist, and was to devote his life to persuading his class to work out their own social salvation. From 1892 to 1896

he was Labour M.P. for West Ham South; in 1900 he was returned as Labour member for Merthyr-Tydfil, and retained his seat with increased majorities in 3 subsequent elections. In 1892 he founded, with others, the Independent Labour party (I.L.P.) (q.v.), and was the first chairman of the parl. Labour party. Was editor of the *Cummock News* from 1882 to 1886, and the following year founded and ed. the *Miner*, afterwards the *Labour Leader*. H. can properly be regarded as the founder of the modern Brit. Labour party, although many of his personal views (e.g. his pacifism) are not now general among its members. His efforts to ensure co-operation between the trade unions and the political Labour movement laid the foundations for the future basis of Labour support in the country as a whole. See life by W. Stewart, 1921.

Harding, Warren Gamaliel (1865-1923), 28th President of U.S.A., b. Bloomington Grove, Morrow co., Ohio; eldest of 8 children of George Tyrion H., a physician of Scottish descent. He received some education at Iberia, Ohio. In 1884, employed on the *Marion Democratic Mirror* weekly, whose proprietor afterwards enabled him to start the *Marion Star*, by which he made himself known. He was elected as a Republican to the State Senate in 1898; lieutenant-governor of Ohio in 1903, and a candidate for governorship in 1910. In 1914 he was elected U.S. senator. He supported the policy of President Wilson during the First World War; but was among those who strongly disapproved of Wilson's post-war policy—especially in connection with the League of Nations. On 2 Nov. 1920 he was elected by the Republicans as president by an enormous majority. Although opposed to the League, H. favoured an international court of justice. During his term the Conference for Limitation of Armaments was held in Washington, 1921-2. In the summer of 1923 he visited Alaska, and on his return d. suddenly at San Francisco, California.

Harding of Petherton, John, 1st Baron (1896-), soldier, b. S. Petherton. Educ. at Iminster Grammar School, he afterwards worked in the G.P.O. In 1914 he was commissioned in the 1/11th battalion London Regiment, transferring later to the Machine-gun Corps, commanding a battalion at the age of 21. During the First World War he was wounded twice, and won the M.C. His regular commission in the Somerset Light Infantry in 1920 was back-dated to 1917. After serving as adjutant of the 2nd battalion of his regiment, he was brigade-major with the Brit. element of the international Saar plebiscite force. At the outbreak of the Second World War he was commanding 1st battalion Somerset Light Infantry in India, soon transferring to the Middle East, where he rose to be major-general commanding the famous 'Desert Rats', the 7th Armoured Div., at Alamein. He was again wounded and did not see the fall of Tripoli. In England in 1943 he was put in command

of 8 Corps, being intended as a second-front general, but events led to his being sent to Italy to command 13 Corps in 1945. After the war he was the arduous task of maintaining order in Trieste. In 1947 he was in command of Southern Command, and became C.-in-c. Far East land forces in 1949, C.-in-c. Brit. Army of the Rhine, 1951, and C.I.G.S., 1952. From 1955-7 H. was governor and C.-in-c. Cyprus at a time of violent agitation within the island for union with Greece. He was created a baron in 1958.

Hardinge, Henry, 1st Viscount Hardinge of Lahore (1785-1856), general, b. Wrotham, Kent. After being gazetted as ensign, he was in active service in the Peninsular war. From 1809 to 1813 he was connected with the Portuguese Army, and was then appointed commissioner at the Prussian H.Q. by Wellington, but being wounded at Ligny was unable to fight at Waterloo. After being secretary for war in 1828, secretary for Ireland in 1830, he became governor-general of India in 1844 at the time of the Sutlej campaign against the Sikhs, but in his capacity as a soldier he took the position of second-in-command to Sir H. Gough. After the peace of Lahore he succeeded Wellington as commander-in-chief, 1852, being made a field-marshal in 1855. See Charles, Viscount Hardinge, *Rulers of India: Viscount Hardinge*, 1891.

Hardinge of Penshurst, Charles, 1st Baron (1858-1944), diplomat, 2nd son of the 2nd Viscount H., and grandson of the 1st Viscount H. He was educ. at Harrow and Trinity College, Cambridge, and began his career in the diplomatic service in 1880. He was Brit. ambas. at St Petersburg, 1904-6. H. was viceroy of India from 1910 to 1916, being created a peer in 1910. It was in his term that the cap. was moved to Delhi, and the partition of Bengal, enacted by Curzon, revised. H. persisted in his policy of friendly relations with the Indian princes and sympathy with the new W.-educ. middle classes, as well as with the needs of the masses, notably in the way of provision of public works, sanitation, and education. He returned, under Balfour, to the Foreign Office, but had to bear his share of responsibility for the fall of Kut, for the findings of the commission of inquiry included the ex-viceroy as well as the secretary of state for India in their censure. Austen Chamberlain at once resigned, but H.'s resignation was not accepted by Balfour and, in 1920, he succeeded Lord Derby as ambas. in Paris, resigning in 1922. His temperament was too reserved to seek popularity; but he had sound judgment, great determination, and industry, and a thorough knowledge of official affairs.

Hardness, Scale of, in mineralogy. The H. of a mineral is measured according to its power of scratching other minerals. For this purpose Mohs arranged a series of minerals in definite order of H., to form a standard scale for comparative purposes. Those selected were (10) diamond; (9) sapphire; (8) topaz; (7) quartz; (6) orthoclase; (5) apatite; (4) fluorspar; (3) calcite;

(2) gypsum; (1) talc. In this scale each member will scratch all those with lower, and will be scratched by those with higher, numbers. The test, which is only approximate, is best made with crystals or fragments having smooth, bright faces; a collection of such pieces of the above minerals forms an important part of a mineralogist's equipment; and by means of it the H. of any unknown specimens may be determined, which would otherwise be undistinguishable except by elaborate chemical tests. Minerals often differ in H. on different faces of their crystals, and the same face may also have different degrees of H. in different directions. More refined methods are necessary to detect these differences, and for this purpose the sclerometer, an instrument in which a small point of steel or diamond is drawn across the surface under a definite pressure, is used. Useful tests may be made by quite simple means; thus talc (1) will mark paper or cloth; gypsum (2) is scratched by the finger-nail; calcite (3), fluorspar (4), apatite (5) are cut without difficulty by a steel knife; orthoclase (6) can just be scratched; and quartz (7) is harder than steel. Minerals which have a H. above (6), and cannot be scratched with a splinter of quartz, are rare, and are generally precious stones.

Hardwar, tn in Uttar Pradesh State, India. It stands on the r. b. of the Ganges, where it finally emerges from the foot-hills, and is visited every year by a large number of pilgrims. Sometimes there are as many as 500,000, especially when, every 12th year, a greater festival, the Kumbh-Mela, is held.

Hardwicke, Sir Cedric Webster (1893-), actor, b. Lye, Worcestershire, educ. at Bridgnorth and Academy of Dramatic Art. First appearance, Lyceum, 1912. He joined Benson's company, 1913, and was in Shakespearean plays at the Old Vic, 1914. Served in France, 1914-18. In 1922 he joined the Birmingham Repertory Company, and played at Malvern festivals, including prominent roles in Shaw's plays, and in the *Barretts of Wimpole Street*, 1934. His films include *Peg of Old Drury*, *Things to Come*, *Tudor Rose*, *Laburnum Grove*, *The Moon is Down*, and *Nicholas Nickleby*. Rede lecturer at Cambridge, 1936. Among his pubs. is *Let's Pretend: Recollections and Reflections of a Lucky Actor*, 1932.

Hardwicke, Philip Yorke, 1st Earl of (1690-1764), lawyer and lord chancellor, b. Dover. He was called to the Bar in 1715. In 1719 he became a member of Parliament, and in the following year was made solicitor-general and knighted. In 1732 he became lord chief justice, and 4 years later lord chancellor. In 1740 H. assisted in the gov. of the country during the absence of the sovereign, and was also instrumental in settling affairs after the Jacobite rebellion in 1745. He was created Viscount Royston and Earl of H. in 1754.

Hardwood Trees are trees belonging to the botanical group *Angiosperms* (q.v.), the broad-leaved trees, as opposed to the

long to the group *Gymnosperms* (q.v.) and chiefly consist of the conifers. Most hardwoods are in fact harder than softwoods, but some hardwoods, e.g. balsa from South America, are softer than any softwood. Hardwoods vary greatly in their colour, weight, hardness, and other properties. See **TIMBER**.

Hardy, Alexandre (c. 1569-c. 1631), Fr. dramatist, was b. Paris. He was connected for some time with a travelling company of actors, and wrote plays for them. His plays, of which 34 are extant, and which he obtained mainly from Sp. and It. sources, numbered probably about 600, the best being *Marianne*, 1610. See E. Rigal, *Alexandre Hardy et le théâtre français à la fin du XVI^e et au commencement du XVII^e siècle*, 1889; S. W. Deierkauf-Holsboer, *Vie d'Alexandre Hardy*, 1847.

Hardy, Sir Charles (1716-80), admiral, entered the navy about 1730. In 1744 he was charged with the loss of a convoy to Newfoundland, but was eventually acquitted. In 1755 he was made governor of New York, and took part in the siege of Louisburg. In 1759 he was in command under Hawke at Quiberon Bay, and was made an admiral in 1770. He was appointed to be governor of Greenwich Hospital in 1771, and was given the command of the Channel Fleet in 1779.

Hardy, Oliver (1892-1957), Amer. actor, b. Atlanta, Georgia. He toured the S. U.S.A. with his own singing act, and later joined Stan Laurel in a series of popular screen comedies.

Hardy, Thomas (1840-1928), novelist and poet, b. Upper Bockhampton, near Dorchester. His father was a stonemason, and his mother came of a family which had owned some small landed property in Dorsetshire for many generations. H.'s branch of the family was in modest but tolerably comfortable circumstances, and it is claimed that it was connected with Sir Thomas H. Nelson's flag-captain (whom he is said to have resembled in features), also with the T. H. who founded the Dorchester Grammar School in the 16th cent., and with John Le H. of Jersey who settled in the W. of England. H., who as a boy was of a studious nature, was educ. at a local school, and received private tuition in Lat. and Fr. His father wished him to follow the profession of an architect, and accordingly he was articled to John Hicks, an eccles. architect in Dorchester, and later with Sir Arthur Blomfield in London. It is easy to trace in his novels his familiarity with this study, notably in the novel *A Pair of Blue Eyes*, 1873, in which he makes use of the knowledge of old churches he acquired under Blomfield when the latter was engaged in restoration work. It has been asserted that H. was not greatly enamoured of the vocation, but was fonder of music and drama; but it is significant of his powers that after less than 6 years' study he became prizeman of the Royal Institute of Brit. Architects and of the Architects' Association. His special bent,

however, was towards writing, and, in particular, towards poetry, and when ultimately he embraced writing as a calling he did so with a confidence and sureness which may, perhaps, be regarded as natural in one who became the greatest man of letters of his time. His first pub. effort was a quaintly humorous article entitled 'How I Built Myself a House,' which appeared in *Chambers's Journal*, Mar. 1865. At this time he was attending evening classes in King's College to complete the academic side of his education, and there he studied eagerly Greek and

that periodical. The tale was the masterpiece *Far from the Madding Crowd* (pub. as a novel in 1874), which first reveals in ample measure the wonderful feeling that H. possessed for the Wessex countryside, and his grasp of artistic unity—a grasp preserved throughout the mazes of essentially intricate and baffling plots. In 1876 appeared *The Hand of Ethelberta*, the one novel with an approximation to the conventional happy ending, and for this reason not one of his best. In that year H. married his first wife, Emma Lavinia Gifford, niece of Dr Gifford, archdeacon of London. This lady d. in 1912, and we may accept it that the beautiful character Elfrida in *A Pair of Blue Eyes* is his literary tribute to her memory, and that the 'Poems of 1912-1913' in *Satires of Circumstances* reflect the poignancy of his grief. In 1878 was pub. *The Return of the Native*, than which no greater Eng. rural novel has been written; the characters in it, albeit rounded and convincing, are yet merged in the still greater portrayal of the milieu, 'Egdon Heath,' which, as has been well said, is the real 'hero' of the story. This work, too, marks an obvious advance in range of ideas and philosophic depth, and it securely laid the foundation of the impressive array of novels which follow it. The striving—and successful striving—after artistic unity and coherence is manifest from H.'s own classification of his novels into 'Novels of Ingenuity' (*Desperate Remedies*, *The Hand of Ethelberta*, and *A Laodicean*, 1881); 'Romances and Fantasies' (*A Pair of Blue Eyes*, *The Trumpet Major*, 1880, *Two on a Tower*, 1882, *The Well-Beloved*, 1897, and *A Group of Noble Dames*, short stories, 1891); and 'Novels of Character and Environment,' containing all the remaining novels and short stories and among them all his best work: *Far from the Madding Crowd*, *The Return of the Native*, *The Mayor of Casterbridge*, 1886, *The Woodlanders*, 1887, *Tess of the d'Urbervilles*, 1891, and *Jude the Obscure*, 1895, together with *Under the Greenwood Tree* and 2 vols. of short stories entitled *Wessex Tales*, 1888, and *Life's Little Ironies*, 1894; to these may be added the collection entitled *A Changed Man*, 1913, somewhat vaguely classified in a fourth category, 'Mixed Novels,' to which none other was added.

It need hardly be said that romance characterises many novels besides those so classified; while environment and characterisation are strong features of most of them. Indeed, all of them may quite well receive the title 'Wessex Tales,' and are commonly classified as the Wessex Novels; a description which most appeals to the reader by reason of the wealth of local colour in them. H.'s treatment of natural features is never irrelevant; it is integrally a part of the story, and the characters seem to spring from the topography with the inevitableness of the development of the plot. *Tess of the d'Urbervilles*, his most popular novel, was written as a serial for the *Graphic*. In it his negative philosophy of



THOMAS HARDY

Pencil drawing by W. Strang

Lat., theology, literature, and even astronomy. H., if great as a born novelist, was in a sense a novelist *malgré lui*. His earlier and later passion was poetry, and as a poet he revealed a truly original genius—the poems, generally speaking, being the novels in epitome. His literary career began with verse, but there is not much of his early verse extant, probably for the good reason that he held it back for later development. It was with reluctance that he gave up poetry for the time being and turned to novel-writing for a living.

In 1871 appeared *Desperate Remedies*, which shows considerable maturity for an author of 31 years of age, possibly because a certain amount of destroyed fiction had preceded it; and in 1872 *Under the Greenwood Tree*. In 1873 came a *A Pair of Blue Eyes*, which first appeared in *Tinsley's Magazine*, and this was followed by a request from Frederick Greenwood, editor of the *Cornhill*, to write a story for

the irony of fate is most powerfully and dramatically revealed. This irony is the keynote of the whole of his work, and doubtless sprang partly from H.'s deep sense of compassion for all creatures, human or otherwise. H. is almost obsessed with the insoluble problem of the cruelty of nature, and this recurrent theme is the framework into which all his great prose tragedies are built. Apart from the Schopenhauerian tenets implicit in *The Dynasts* and H.'s claim to the idea of Imprecipience becoming percipient (or, in his words, the idea that 'the Unconscious Will of the Universe is growing aware of itself'), there is next to nothing constructive in the philosophy of H., and perhaps the effect of his negative treatment is enhanced by the fact that he makes no attempt to suggest any way out for the victims of fate's satire. In the portrayal of women H. is supreme, or at all events highly individualistic. Few authors can show so striking a gallery of female characters, all memorable and distinctive, and nearly all poignantly doomed with the necessity of tragedy. It has often been said that H. is a pessimist, but to this charge he himself replied that he was 'a pessimist in so far as that character applies to a man who looks at the worst contingencies as well as the best in the human condition.' His most criticised novel was his last, *Jude the Obscure*, which an un-discerning and unprogressive critic lampooned as 'Jude the Obscene.' Judged by modern standards of 'frankness,' the novel is of Victorian sobriety; but it has been suggested that the attacks on this grim study 'cured him of his interest in novel-writing,' for *The Well-Beloved*, the last novel to be pub., was merely the revised version of a story written some years previously.

It is more probable that he was only too glad to find an excuse for returning to poetry. In this direction it was imagined that at his age he must have 'shot his bolt,' yet at the age of 64 he startled the literary world with *The Dynasts*, 1904-8, an extraordinary revelation of undimmed intellectual powers. This epic drama, conceived on the grand scale, is an interpretation of the national genius of England in its most heroic aspect, and across its stage pass all the political figures of the period, and in its stately verse, H. 're-created the tragic splendour and dignity of the Napoleonic wars.' It reflects a close study of the metaphysical conception of the indivisible and immanent Will, and the curious will find in the work many lines which closely follow lines in Schopenhauer's *The World as Will and Idea*. From the time of the production of this work H.'s fame as a poet actually continued to increase. His collected poems up to 1918 are *Wessex Poems*, 1898, *Poems of the Past and the Present*, 1901, *Time's Laughing Stocks*, 1909, *Satires of Circumstances*, 1914, and *Moments of Vision*, 1917. If there is a sombre note as of grey and mournful evenings running throughout them, it is agreed that H. made a new poetry, whether lyric or

dramatic; new in its bitter speech and in its restrained music. He shows a marked sympathy with the Romantic school of Eng. poets, and this is largely to be explained by his deeply romantic sentiment towards children, animals, and nature generally; and in his self-composed memorial verses 'Afterwards' we find his feelings and intentions as a romantic poet reaffirmed. Four collections were pub. after 1918, namely, *Late Lyrics and Earlier*, 1922, *Human Shows, Far Fantasies*, 1925, and the posthumous vol. of poems *Winter Words*, 1928. Among the most striking of his poems are 'The Darkling Thrush,' 'In Time of the Breaking of Nations,' 'When I Set out for Lyonesse,' and 'Men who March Away.' His verse tragedy *The Famous Tragedy of the Queen of Cornwall at Tintagel in Lyonesse*, on the eternally new theme of Tristram and Isolde, was pub. soon after its production at Dorchester in 1923. 'Christmas in the Elgin Room,' his last poem, was pub. in *The Times* in 1927. In 1925 he wrote *Life and Art*, his only non-fictional prose work. On his eightieth birthday the representative poets of England under the presidency of Robert Bridges presented him with an address and an album of poems each had written to mark the occasion. H. was awarded the O.M. in 1910, and his other honours of an academic nature were the degrees of D.Litt., Oxford, where he was honorary fellow of Queen's College; Litt.D. of Cambridge, where he was honorary fellow of Magdalene College; and LL.D. of Aberdeen Univ. He resided at 'Max Gate,' a house which was built to his own design and situated outside Dorchester. In 1914 he married Florence Emily Dugdale, who survived him and wrote his life. He d. on 11 Jan., and his ashes were buried in Westminster Abbey, his heart being buried in his parish churchyard of Stinsford.

See Annie MacDonell, *Thomas Hardy*, 1894; Sir Bertram C. A. Windle, *The Wessex of Thomas Hardy*, 1901; F. A. Hedgcock, *Thomas Hardy: Pensée et artiste* (Paris), 1910; L. Abercrombie, *Thomas Hardy: a Critical Study*, 1912, new ed. 1919; H. Lea, *Thomas Hardy's Wessex* (illustrated), 1913; H. C. Duffin, *Thomas Hardy*, 1916; H. Child, *Thomas Hardy*, 1916; H. B. Grimsditch, *Character and Environment in the Novels of Thomas Hardy*, 1925; P. Braybrooke, *Thomas Hardy and his Philosophy*, 1927; Florence Emily Hardy, *The Early Life of Thomas Hardy, 1840-1891*, 1928, and *The Later Years of Thomas Hardy, 1892-1928* (2 vols.), 1928, 1930; A. McDowall, *Thomas Hardy, a Critical Study*, 1931; S. Norman, *Thomas Hardy*, 1932; Sir A. Strong, *Four Studies*, 1933; E. A. Baker, *The History of the English Novel*, 1938; Lord D. Cecil, *Hardy the Novelist*, 1943; R. A. Scott-James, *Thomas Hardy*, 1951; Evelyn Hardy, *Thomas Hardy*, 1954; (ed.) *The Notebooks of Thomas Hardy*, 1955.

Hardy, Sir Thomas Duffus (1804-78), scholar, b. Port Royal, Jamaica. In 1861 he became deputy keeper at the New

and in 1869 acted for the S. Commission. In 1848 he was the publisher of the *Monumenta Historica*, and he ed. also many of the Rolls of early times. Among the other works which he ed. are *A Catalogue of the Lords Chancellors, Keepers of the Great Seal, Masters of the Rolls, and Principal Officers of the High Court of Chancery*, 1843; *Descriptive Catalogue of the Materials relating to the History of Great Britain and Ireland to the End of the Reign of Henry VII*, 1862-71; and *The Register of Richard de Kellawe*, 1873.

Hardy, Sir Thomas Masterman (1769-1839), vice-admiral, b. Dorset. He entered the navy in 1781, and in 1793, after various appointments, was promoted a lieutenant of the *Meleager* frigate, and came under the immediate orders of Capt. Nelson. In 1798 H. joined Nelson near Elba, and was present at the battle of the Nile. In 1803 he was flag-captain of the *Victory* with Nelson, and acted in that capacity in the battle of Trafalgar. H. was with Nelson on the quarter-deck of the *Victory* when he received his mortal wound, and at his funeral in 1806 bore the 'banner of emblems.' H. was created a baronet the same year. He joined the board of admiralty as First Sea Lord in 1830, and in 1837 became a vice-admiral.

Hardy Annuals, see GARDENING.

Hardyng, John (1378-c. 1465), Eng. rhyming chronicler, b. in Northumberland. He took part in the battle of Agincourt in 1415. H.'s *Chronicle* gives an inaccurate hist. of England from the earliest times down to his own day, the first ed. being Lancastrian in tone, the second Yorkist.

Hare, Augustus John Cuthbert (1834-1903), author, b. Rome, nephew of the churchmen Augustus Wm and Julius Charles H. (q.v.). He was educ. at Harrow and Oxford. His works contain accounts of his travels, especially of the cities of Italy and France. They include *A Winter at Mentone*, 1861, *Walks in Rome*, 1870, *Wanderings in Spain*, 1872, *Days near Rome*, 1875, *Cities of North and Central Italy*, 1875, *Walks in London*, 1877, *Cities of South Italy and Sicily*, 1882, *Florence*, 1884, *South-Eastern France*, 1890, *North-Eastern France*, 1890, *Sussex*, 1894, *North-Western France*, 1895, *The Riviera*, 1896. He also wrote *Memorials of a Quiet Life*, 1872-6, *Life and Letters of Maria Edgeworth*, 1894, *Story of my Life*, 1896-1900, *Story of Two Noble Lives*, 1898, and *The Gurneys of Earham*, 1895.

Hare, Sir John (1844-1921), actor and manager, b. Yorks, son of Thomas Fairs, of London. His first appearance on the stage was at Liverpool, 1864. He came to the Prince of Wales's Theatre, London, 1865, and was there for about 9 years, appearing in *Caste*, 1867, *School*, 1869, *Money*, 1872, and *The School for Scandal*, 1874. H. was manager of the Court Theatre, 1875-9. He was in partnership with Kendal at St. James's Theatre, 1879-88, and they introduced a number of Pinero's plays to the public. The Garrick was built for H. by W. S. Gilbert

and opened in 1889 with *The Profligate*. *A Pair of Spectacles* was produced in 1890, Benjamin Goldfinch being one of his most popular roles. H. also played in *A Scrap of Paper*, 1876, 1883, *The Gay Lord Quex*, 1899 (at the Globe (q.v.)), which he took over in 1897), and *Money* (at the command performance at Drury Lane), 1911. He toured in America, and was knighted in 1903. His last appearance was in 1917 in *A Pair of Spectacles*. His son, Gilbert H., also made a name for himself on the stage. See T. E. Pemberton, *John Hare, Comedian*, 1895; and C. W. Scott, *The Drama of Yesterday and To-day*, 1899.

Hare, Julius Charles (1795-1855), Brit. clergyman and essayist, b. Vicenza in N. Italy. Educ. at Charterhouse and Cambridge, he took orders, and in 1832 was appointed to the rich family living of Hurstmonceux in Sussex; he was also archdeacon of Lewes and chaplain to the queen. His first work was *Guesses at Truth*, 1827, written in collaboration with his brother, Augustus Wm H. (1792-1834). He also wrote *The Victory of Faith*, 1840, and other theological works, and pub. with a life the *Essays and Tales of John Sterling*, 1848.

Hare, William, Irish criminal body-snatcher. See BURKE, WILLIAM.

Hare, name of all rodent quadrupeds of the family Leporidae, except rabbits, the 2 chief genera being *Lepus* and *Lagomys*. They have long ears and hind legs, very short upturned tails, and a divided upper lip. H.s construct 'forms,' or shallow nests on the earth's surface in the grass, and do not burrow like rabbits. They are extraordinarily swift in leaping and running, and their colouring much resembles their surroundings. H.s are solitary and nocturnal in habit, and feed on vegetable substances, grain, roots, and bark of young trees. They are common to most parts except Madagascar and Australasia, but abound chiefly in the N. hemisphere. Where the common *Lepus europaeus* is not found, the smaller *L. timidus* (Alpine or mt hare) generally replaces it. Two to 5 leverets are produced sev. times annually. In America the Canadian polar H.s and the *Lepus americanus* turn practically snow-white in winter. In the W. are to be found a number of long-eared H.s called jack H.s. Among these are the white-tailed H.s (*Lepus campestris*) and 4 species of black-tailed rabbits. See also RABBIT. See E. Coues, *Monograph of the Rodentia*, 1877; E. Thompson, *Wild Animals I have known*, 1898; and F. E. Beddard, *Mammalia*, 1902.

Hare and Hounds, originally a school-boy pastime in the form of a paper-chase. Two chosen persons, called 'hares,' have about 15 min. start (their 'law') and lay the 'scent' (usually fragments of paper); they are chased by the remainder, called 'hounds,' who track their course from the 'scent.' Paper-chasing at Rugby in the early 19th cent. was called 'Hare-and-Hounds'; under this name *Tom Brown's Schooldays*, 1857, by Thomas Hughes, brought it to notice, and in 1868 some

members of the Thames Rowing Club formed the Thames H. and H., the first paper-chasing club for men. Other clubs, called also Harriers, Beagles, etc., soon followed, but most have abandoned paper-chasing for its derivative, cross-country running (q.v.). Thames H. and H. survives as the oldest cross-country club, but the Cheshire Tally Ho! H. and H. club (1872) is still a paper-chasing club. See also ATHLETICS; RUNNING AND HURDLING.

Harebell, 'Scotch bluebell,' name given to the charming perennial wild flower, *Campanula rotundifolia*, with delicate bell-shaped flowers, usually a lovely blue, but sometimes white. H.s. or 'witches' thimbles,' are found chiefly in the N.



HAREBELL

hemisphere, growing freely among bracken and heather on open downs and hills. The lower (radical) leaves only are heart-shaped, the others being linear (narrow blades). Lindley (1799-1865) tried to establish the spelling 'hairebell' with reference to the frail stalk, but it seems to be incorrect. H. was originally in England *Endymion non-scripta* (wild hyacinth or bluebell). Always a favourite with poets, it is with them an emblem of purity. The Australian H. is *Wahlenbergia gracilis*.

Harefield, vil. in the urb. dist. of Uxbridge, Middx., England. At H. Place, the old manor house burned down in 1660, Sir Thomas Egerton entertained Elizabeth I. and Milton's *Arcades* was acted. The church contains outstanding monuments. Pop. 3000.

Harefoot, Harold, see HAROLD I.

Harelbeke, tn in the prov. of W. Flanders, Belgium, on the R. Lys, 3 m. NE. of Courtrai, engaged in agriculture, the cultivation of tobacco and flax-retting. There are manufs. of linen, lace, and oil. It is the bp. of Peter Benoît (q.v.), a Flem. composer. Pop. 14,900.

Harem (Arabic *harim*, prohibited, unlawful, sacred), the name given in the E. to that part of the household set aside

for the wives and concubines of a Muslim, called also the seraglio, zenana, or *andarun*. The term is also used collectively for all the female members of the household. It is applied also to the mosques at Mecca and Medina, and to the sacred enclosure round a mosque. The H. system is of very ant. origin, and common to most oriental communities, especially where polygamy is allowed. The Koran allows 4 wives to a Muslim (the sultan may have 7 by unwritten law), but there is no limit to the number of concubines except ability to support them. The rules of the H. vary in different countries. Usually the ruler's mother reigns supreme in the royal H.s. Each wife has a separate suite of apartments, with female slaves and odalisques for attendants. Women must all be veiled in public, and are supervised by eunuchs. No man, unless a near relative, may enter on pain of death. See E. Lott, *Harem Life in Egypt and Constantinople*, 1869; Annie Harvey, *Turkish Harems and Circassian Homes*, 1871; Barnes, *Behind the Purdah*, 1897; W. Ramsay, *Everyday Life in Turkey*, 1897; Van Sommers and Zverner, *Our Moslem Sisters*, 1907; P. Loti, *Les Désenchantées*, 1906; M. Driver, *The Englishwoman in India*, 1909; and N. Penzer, *The Harem*, 1936.

Hare's Ear, see BUPLEURUM.

Harewood, Earls of, see LASCELLES.

Harfleur (anc. *Harflemum*, or *Harfloricum*, apparently latinised forms of *Herostoth* or *Harefot*), Fr. port in the dept of Seine-Inférieure, near the mouth of the Lézarde. It was a chief port of France before the rise of Le Havre, about 4 m. W. It is connected to Le Havre and the Seine by the Tancarville canal. It is generally identified with the Caracotinum of the *Itinerary* of Antoninus, and the neighbourhood is rich in Rom. remains. H. was captured by the Eng. under Henry V in 1415, and the fine Gothic church is attributed to him. It was finally recaptured by Charles VII in 1450. It was badly damaged by flooding in the Second World War. It has metallurgical works, potteries, distilleries, and a sugar-refinery. Pop. 5000.

Hargreaves, Edmund Hammond (c. 1816-1891), discoverer of the Australian goldfields, b. in Hants, England. Settling in Australia in 1833, he was a sheep farmer at Sydney from 1834 to 1849. He gained experience as a gold-digger in California in 1849, and, struck by the similarity in geological formation between California and the Blue Mts of New South Wales, determined to seek for deposits there also. He succeeded in finding gold near Macquarie R., at Lewis Ponds Creek, 1851. He received a reward of £15,000 from the colonial gov., and later a pension. H. wrote *Australia and its Goldfields*, 1855.

Hargreave, Lawrence (1850-1915), pioneer in aviation, b. England, migrated to Australia 1866. In the eighties H. was experimenting with numerous models and by 1894 he could demonstrate that with a fly-machine motor and cellular kites a man could be lifted into the air. Besides

demonstrating that a heavier-than-air machine could fly, he invented a rotary engine and experimented with a hydroplane. His most important papers were pub. in *Journal and Proceedings of the Royal Society of New South Wales*, 1885, 1893, 1895.

Hargreaves, James (d. 1778), cotton operative and inventor of the 18th cent. who was b. near Blackburn, Lancs. He earned his living as a weaver and carpenter, helping Peel to construct a carding machine in 1780. About 1766 he invented the spinning-jenny used in the manuf. of cotton. His fellow spinners, being strongly prejudiced against machinery and new methods, mobbed him and destroyed his frame. H. removed to Nottingham in 1768, and erected a spinning-mill there. See H. Howe, *Memoirs of the most Eminent American Mechanics*, 1841; and F. Espinasse, *Lancashire Worthies*, 1874.

Haricot, ripe seeds of *Phaseolus vulgaris* and varieties, widely used as food when dried.

Harington, Sir Charles Harington (1872-1940), general, b. Chichester, son of E. J. H. Educ. at Cheltenham College. After passing out of Sandhurst he entered the King's Liverpool Regiment, 1892, and served on the staff in the South African war, being mentioned in dispatches. In the First World War he was on the staff of Gen. (later F.M.) Lord Plumer, commander of the Second Army, operating in the Ypres area, and won high regard for his resourcefulness and qualities of leadership. After the war he became deputy chief of the general staff at the War Office, and later general officer commanding the army of the Black Sea, his handling of the serious situation that arose at Chanak on the straits in 1922, on the eve of the war between Turkey and Greece over ter. mandated to Greece under the treaty of Sévres, being masterly. His negotiations with Mustapha Kemal resulted in a satisfactory and peaceable settlement of the important question of the internationalisation of the straits, at a time when a collision with the Turkish forces appeared inevitable. General officer commanding N. command, 1923-7, general 1927, and, later, appointed to the command of the W. dist., India. Commander-in-chief, Aldershot command, 1931; governor of Gibraltar, 1933. Retired 1938. He did much to promote the cause of education in the army, being the first colonel-commandant of the Army Educational Corps formed after the First World War. Wrote his autobiography, *Tim Harington Looks Back*, 1940.

Harington, Sir John (1561-1612), poet and translator, b. Kelston Park near Bath. Educ. at Eton and Cambridge, he became a courtier of Queen Elizabeth. In 1590 he served in Ireland under Essex, by whom he was knighted in the field, and in 1592 he was high sheriff of Somerset. Noted for his witty epigrams, he made a good trans. of the *Orlando Furioso* of Ariosto in the metre of the original. Banished from the court for his *Metamorphosis of Ajax*, 1598, and other

Rabelaisian writings, he was nevertheless appointed tutor to young Prince Henry by James VI and I, with whom he had ingratiated himself by his *Tract on the Succession to the Crown*, 1602; H.'s *Briefe View of the Church of England* was written for the Prince's instruction. His collected *Epigrams* were pub. in 1613, but his most valuable work is *Nugae Antiquae* (Old-time Trifles), a miscellaneous collection from his writings and papers first pub. in 1769, and throwing much light on Elizabethan times. See Sir W. Raleigh, *Some Authors*, 1923; and T. Rich, *Harington and Ariosto*, 1940.

Harriot, Thomas, see HARRIOT.

Hariri, Abu Mohammed ul-Qasim ibn Ali, surnamed Al-Hariri (the silk merchant) (c. 1054-1122), Arabian writer. He wrote 2 treatises on philology, *Muhat-ul-Idb* (see Pinto's ed., Paris, 1835-9) and *Durrat-ul-Ghawuds* (see Thorbecke's ed., Leipzig, 1871). His chief work is the *Maqamat* (Assemblies), 50 *maqamas* in prose and verse. It ranks in the E. next to the Koran, and has influenced all the nations of Islam.

Hari-Rud, see HERRI-RUD.

Harkness, Edward Stephen (1874-1940), Amer. railway magnate and philanthropist. Both in his own country and in Great Britain he was known for his benefactions to education, and he was a consistent advocate of a closer understanding between Britain and the U.S.A. His largest Brit. benefaction, the Pilgrim Trust, which amounted to about £2,000,000, was made in 1930, and he also enlarged the Commonwealth Fund, which had been created by his mother for providing scholarships for Brit. students to Amer. univs.

Harlaw, locality of Aberdeenshire, Scotland, 18 m. from Aberdeen, noted for the defeat of the Highlanders under Donald, lord of the isles, by the forces under the earl of Mar, 1411.

Harlech, coast tn. par. and anct cap. of Merioneth, Wales, 10 m. from Barmouth, on the W. Region railway. The castle was captured by the Yorkists from the Lancastrians (1468), the national Cambrian war-song 'March of the Men of Harlech' perhaps originating during this siege. It held out long for Charles I. Its beautiful ruins still remain overlooking the sea. Pop. 1500.

Harleian Manuscripts, collection of valuable MSS., books, and pamphlets (including the earliest known copy of Homer's *Odyssey*), originally made by Robert Harley (q.v.), 1st earl of Oxford, and increased by his son Edward (1689-1741). Copies of the classics and of Early Eng. poetry are included, as well as many unique illuminated MSS. A selection of rare pamphlets was pub. as *The Harleian Miscellany*, 1744-6, ed. by W. Oldys (q.v.), who also catalogued the Harleian Library. Much of the collection was acquired for the Brit. Museum for £10,000 in 1753 from Lady Oxford.

The Harleian Society was founded in 1889 (incorporated 1902) for publishing MSS. dealing with genealogy, heraldry,

etc. Over 100 vols. of transactions have been issued.

Harlem, part of New York City, U.S.A., extending about 2 m. N. of Central Park, with East R. on E. and H. R. on NE. H. has the largest and most prosperous bloc of the negro pop. of America. H. also has large colonies of Puerto Rican, It., and Lat.-Amer. peoples. The area remained rural until the improvement in the 19th cent. of transportation links with lower Manhattan. Public housing projects and other attempts to relieve congested and unfavourable conditions have been instituted since 1930.

Harlem River, New York City, properly a strait separating Manhattan Is. from the Bronx and NE. and connecting the Hudson R. with the East R. (i.e. the strait between Manhattan and Long Is.). It is crossed by bridges and is navigable.

Harlequin (Fr. *arlequin*, It. *arlecchino*), equivalent to the Eng. clown. It has been suggested that the character is a survival from Gk comedy or the Rom. *pantomimus*, but it has no ascertainable connection with either. In the 15th cent. the improvised It. comedy (*commedia dell' arte*, q.v.) had crossed the Alps with its company of jovial characters partly borrowed from masked comedy, though also in great part reflecting the various types of regular comedy anct and modern, and including Pantalone with Arlecchino among other varieties of *zanni*. But whether the traditional costume of the anct Rom. *mimi* or mimes—the centunculus or variegated harlequin's coat, the shaven head, and unshod feet—had before this time become familiar to the provincials has not been decided. The various proposed etymologies of the word H. are mostly speculations; but a long discussion on its origin will be found in Weekley's *Words Ancient and Modern* (consult also Wyld's *Universal English Dictionary*). The character of the early H. was a mixture of extravagant buffoonery with great bodily agility, but in the middle of the 16th cent. his character changed and he became a simple ignorant servant, cowardly, and easily induced to commit tricks and knaveries. In Eng. pantomime he became a lover and magician, whose business it was to protect Columbine from the clown and pantaloons. For many years H. was the chief character in the Harlequinade (q.v.), until displaced by Grimaldi, the great clown. There were 2 sorts of H.s, those who spoke and those who mimed, and actors chose the method which suited them best. John Rich, who played under the name of Lun, was a silent H. Many distinguished actors have played H., including Edmund Kean.

Harlequinade, from which pantomime developed, was in Great Britain a modified form of the *commedia dell' arte*. Its main characters were the clown, a person of most mischievous character who set law and order at defiance, stole everything he could, perpetually outwitted the policeman, and made fun of his old father, the pantaloons. The clown's own personal 'property' was a red-hot poker.

He also made love to Columbine but was always defeated by Harlequin, a magical personage with whom the clown could never cope. The Harlequin's skin-tight costume was introduced by Byrne at Drury Lane in the early 19th cent.—prior to that he wore looser clothes but always with the coloured, diamond-shaped patches. His magic sword of lath was always a part of his costume and his black mask had a special meaning: when it was turned up he was visible, when turned down he was invisible. But the rise of Grimaldi forced Harlequin into second place. At one period Pierrot was also a character in the Harlequinade, an unsuccessful suitor of Columbine. In later years the H. became commercialised and clowns took to advertising goods, for which they received payment. This did much to decrease its popularity in the eyes of the children to whom it mainly appealed.

Harless, Gottlieb Christoph Adolf von (1806-79), Ger. Lutheran theologian, b. Nuremberg. His chief works are *Theologische Encyclopädie und Methodologie*, 1837, *Die Christliche Ethik*, 1842, and his autobiography, 1872.

Harley, Robert, Earl of Oxford and Mortimer (1661-1724), Eng. statesman, b. London, son of Sir Edward H., whose family were Whig in politics. H. entered Parliament first in 1689. During William III's reign he acted with the Whigs, but after the accession of Anne, with his more famous colleague, St John, afterwards Lord Bolingbroke, he deserted this party and became a leader of the Tories. He was Speaker of the House of Commons in 1701, and chief secretary of state in 1704, which post he resigned 4 years later. In 1710 he was nominated chancellor of the Exchequer, and in the following year he became lord high treasurer and was raised to the peerage with the title of earl of Oxford. He took part in the secret negotiations with France which resulted in the treaty of Utrecht, 1713. Subsequently H. and Bolingbroke quarrelled, and Bolingbroke finally persuaded Anne to dismiss H. After her death he was impeached for concluding the treaty with the Fr. but was eventually acquitted, though omitted from the Act of Grace. Like Bolingbroke, H. was an inveterate and unprincipled political intriguer, corresponding simultaneously with both Jacobites and Hanoverians: though a capable party leader, he lacked Bolingbroke's persuasiveness.

Harlingen, seaport in the prov. of Friesland, Netherlands, 16 m. W. by S. of Leeuwarden, on the Waddenzee (q.v.). It is intersected by numerous canals, has an excellent harbour, and exports dairy products, potatoes, and meat. The tn was overwhelmed by an inundation in 1134 and in 1566, when a dike was constructed for its future protection. Pop. 11,600.

Harlington, see HAYES.

Harlow, Jean (1911-37), Amer. film actress, b. Kansas City, famous as the Platinum Blonde. Her films included

Hell's Angels, Platinum Blonde, Red Dust, Dinner At Eight, Reckless, China Seas, Riff Raff, Wife Versus Secretary, Libelled Lady, and Saratoga.

Harlow, tp of Essex, England, in the Epping div., on the R. Lea, 25 m. from London. H. is developing as a new tn, taking the overspill of pop. and industry from London, and aims to reach 80,000 inhab. by 1965. Pop. 20,000 (1954).

Harmattan, hot NE. or E. wind blowing periodically over NW. Africa towards the Atlantic Ocean. It is laden with clouds of reddish dust coming off the desert, and is usually accompanied by a fog and haze that conceal the sun for days at a stretch. It is characterised by extreme dryness, and no dew falls during its continuance—the grass, in consequence, becoming like hay, and vegetation withering. It affects the human body likewise, causing the skin to peel off, but cures skin diseases and checks infection. It prevails at intervals during Dec., Jan., and Feb., continuing sometimes for a fortnight, but more commonly from 2 to 3 days.

Harmodius, Athenian, who, in conjunction with his devoted friend, Aristogiton, formed a conspiracy in 514 BC to slay the brothers Hipparchus and Hippias, tyrants and joint rulers of Athens. They succeeded in killing Hipparchus, but not Hippias, who seized the reins of gov. alone, and revenged his brother's death by imposing taxes, selling offices, and putting to death all of whom he entertained the least suspicion. H. was killed, but Aristogiton fled, only to be subsequently taken and executed. Afterwards H. and Aristogiton came to be regarded as patriotic martyrs, and were held in great honour by the Athenians, who raised statues to their memory.

Harmonia, daughter of Ares and Aphrodite, given by Zeus to Cadmus as wife. She had a necklace as a wedding present that was fatal to its owners.

Harmonic Engine, instrument invented by Edison, by means of which the energy of an electric current is used to sustain the vibrations of a large, heavily weighted tuning-fork, the arms of which are connected with 2 pistons, which work a small pump. This pump compresses air, and is able to drive sewing-machines, etc.

Harmonic Generator, amplifier whose plate current has a high content of harmonics, coupled to an oscillatory circuit (q.v.) tuned to one of the harmonics and thus producing output of the frequency of that harmonic. A 2-stage resistance-coupled amplifier in which the output of the second valve is applied to the input of the first will generate oscillations of high harmonic content. The H. G. is used in radio transmitters and other telecommunication apparatus.

Harmonic Motion, general name given to motion of natural vibration and oscillation. Thus it includes the oscillation about the position of equilibrium of a weight supported by a spring or an elastic string, the small oscillations of the bob of a pendulum, the vibration of any point on

the string of a musical instrument, and finally wave motion in general, of which the last example is a particular case. Thus, if a series of waves moves regularly over a surface, any point on the surface will move up and down with H. M. If equal and opposite waves move in opposite directions, certain points called *nodes* will remain fixed; and this is the case with the strings of a musical instrument fixed at

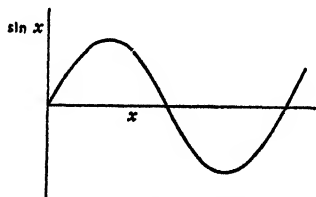


FIG. 1. SINE CURVE

2 ends which are nodes. If a pencil be moved up and down with H. M. in contact with a piece of paper which is moved sideways at a uniform rate, a characteristic tracing is obtained. The curve produced by one important form of H. M. is shown in Fig. 1 and can be obtained by plotting $\sin x$ against x (see SINE, CURVE OF). This motion is known as Simple H. M. A point is said to move with

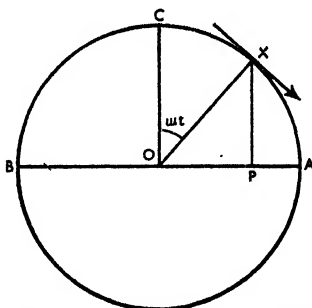


FIG. 2. SIMPLE HARMONIC MOTION

Simple H. M. when its acceleration at any instant is proportional, and opposite in sign, to its displacement from a given point. The motion represented in Fig. 1 can be shown to agree with this definition as follows. Let a point X (Fig. 2) move with uniform speed along the circumference of a circle, and let XP be the perpendicular on any fixed diameter AB. Then P will move with simple H. M. It will be seen that P moves continually backwards and forwards along AB, coming to rest instantaneously and turning back again at A and also at B, and having its highest velocity when

passing through the centre O. The time taken over one complete journey backwards and forwards (OAOBO) is called the *period*. The time to any position since last passing through the middle point O going in a direction previously fixed as positive is called the *phase*, and OA is the *amplitude*. If ω is the constant angular velocity of OX, and t the time from C, the end of the perpendicular diameter to AB, to the point X, then the angle COX is ωt . OP is the projection of OX on AB and equals $a \sin \omega t$, where a is the radius of the circle. This displacement of P from O varies with time in the manner shown in Fig. 1. The period is the time for X to go once completely round the circumference, i.e. $\frac{2\pi}{\omega}$, and is

seen to be independent of the amplitude a . Since X has a velocity $a\omega$ along the tangent to the circle, and by virtue of its circular motion an acceleration $a\omega^2$ along XO, it will be seen that P has a velocity $a\omega \cos \omega t$ along OA and an acceleration towards O, $a\omega^2 \sin \omega t$, i.e. ω^2 OP. Thus the point P has an acceleration directed towards O which is proportional to its displacement from O. Therefore P moves with Simple H. M. about O. As the point P passes through O on its backwards journey, the acceleration becomes a retardation and is still proportional to the distance from O. The more complicated forms of H. M. may be obtained by compounding 2 or more simple H. M.s. The compounding of 2 simple H. M.s. of equal periods, but different amplitudes a and b , along 2 lines OX and OY produces a motion

given by the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$.

Harmonic Progression, name given to a series of quantities in which any 3 consecutive terms, a, b, c are connected by the relation $\frac{a}{c} = \frac{a-b}{b-c}$. From this it may

be easily proved that $\frac{1}{a} - \frac{1}{b} = \frac{1}{b} - \frac{1}{c}$, i.e. that $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}$ are in arithmetic progression.

Hence the reciprocals of the terms of an H. P. form an arithmetic progression. Thus $\frac{1}{a}, \frac{1}{b}, \frac{1}{c}, \dots$ form an H. P. No general formula can be found for the sum of any number of terms, and questions on H. P. are solved generally by the use of the above property. The middle term of any 3 in H. P. is known as the harmonic mean of the other 2, and hence the harmonic mean between a and c is $\frac{2ac}{a+c}$. See MEAN.

Harmonica, see ARMONICA.

Harmonics: 1. Or Partial Tones, as Helmholtz more correctly terms them in his *Sensations of Tone*, are the tones which sound, all but inaudibly (except on bells), over any pure musical note, their pitch being regular and governed by mathematical laws. If a taut string be plucked, for instance, vibrations are caused and a fundamental or predominating note is given; furthermore, not only does the whole string vibrate, but its aliquot parts also, each part having its corresponding

sound according to the 'period' of vibration. Half the same length of string gives a note an octave higher; one-third, a fifth above that, i.e. a twelfth above the fundamental note; one quarter, a fifteenth above the fundamental, i.e. the double octave, and so on. These notes give the intervals of the common chord of the diatonic major scale, of which they are the theoretical basis. The production of artificially intensified and clearly audible H. on both stringed and wind instruments is used as a technical resource. Helmholtz showed that the predominance of different H. affects tonality.

2. In alternating current electrical engineering, deviations from the ideal sine waveform which is generally assumed in fundamental theory and aimed at in the design of all machines. Such deviations occur in circuits containing iron cores worked near saturation, or rectifiers, fluorescent lamps, and arcs. Transient H. are caused by switching-operations. When the waveform is recorded on an oscillograph, it can be submitted to harmonic analysis after Fourier (q.v.), who showed that any periodic function can be resolved into a fundamental (a pure sine wave of the full period) and a number of sine waves of frequencies that are multiples of the fundamental. In practice, the 3rd and 5th H. are the most important. Even (2nd, 4th, etc.) H. do not normally occur.

Harmonium, musical instrument invented in the 19th cent. which produces sounds similar to those of an organ by means of an arrangement known as the 'free vibrating reed,' acted upon by a current of air from a bellows worked by the feet. The invention is ascribed to Alexandre Debain of Paris, though he only perfected an instrument previously known, called the *orgue expressif*, and the same principle followed in the construction of this kind of organ was applied to the H. The feet communicate a more or less rapid movement by the action of 2 pedals, according to the shades of expression which are to be brought out, and the air is made to impinge against thin tongues of metal, and sets them vibrating. Debain's invention of the H. in 1840 became more or less the model of all others that have followed. The H. is about 3 ft 3 in. high, and 4 ft broad, and occupies little space. It has a compass of 5 octaves of keys from C to C, the keyboard being placed on the top, just below the lid. Under this is the bellows-board with the valves for each key, and the different rows of reeds are above the valves. A peculiarity of the free reed is that the pitch of the sound is not altered by the increase or diminution of wind-pressure, the vol. being merely increased or decreased. A similar instrument is the 'seraphine,' and Mason and Hamlin of Boston, Massachusetts, in 1861 introduced a kind of H. called the Amer. organ, which acts by suction and works by exhaustion bellows instead of by force bellows. Since Debain's invention many improvements have been made to the H.,

the chief of which are the addition of a knee action, serving as an expression stop, or bringing into play at once all the stops; and the percussion action, the invention of Kaufmann of Dresden, which consists of the addition of a small hammer which aids the action of the wind by striking the vibrator as soon as the key is pressed down.

Harmony, science treating of the laws which govern the relation of musical notes in chord-combinations and of the progressions between such combinations. The earliest attempt at H. may have consisted in adding a drone bass, sustained as an accompaniment throughout a melody, somewhat in the style of the modern device of pedal-point, e.g., as in the bagpipes. The Greeks had some knowledge of theoretical H., although for some reason no practical application was attempted; and to understand the development of modern H. it is necessary to discuss in some detail the Greek. Pythagoras may be credited with the origination of the science of musical acoustics; the units derived were the octave and the tetrachord, i.e. the div. of tones in the interval of a fourth. There were 3 tetrachords, which may be represented as shown in Fig. 1.

Of these only the diatonic has survived in 3 forms, see Fig. 2. From these tetrachords the scales were derived. Fig. 3 shows the relation between these scales (or 'species') and the full Pythagorean scale, as far as the disposition of their intervals is concerned, the question of pitch being immaterial in practice, although absolute in theory.

From this system the elaborate medieval church modes shown in Fig. 4 were derived; but the difference between Gk and ecclesiastic scales bearing the same name is worthy of note, and while the intervals were read downwards in Greek, the modern practice of reading them upwards was used in church music at this time.

It is unnecessary here to do more than mention the hexachord system, which was later substituted in ecclesiastic music for the Gk tetrachord system. The hexachord, a group of 6 consecutive notes, regarded as a unit for singing at sight, was introduced by Guido d'Arezzo in the 11th cent. But in Guido's time H. had barely begun and the element of chromaticism (see CHROMATIC SCALE), was entirely wanting, only one inflected note being in use; the addition of B flat to the scale made possible wider experiments in the direction of modulation. During the period when these changes were being evolved, an advance was made in the addition of a single part, either in fourth, fifth, or octave, to a *canto fermo*; and in the 11th cent. the method of *discantus* came into vogue, i.e. the singing together of 2 independent subjects or melodies, so constructed as to produce 2-part H. Other devices were tried in the course of the next 2 or 3 centuries; chords were grouped in some crude classification, and attempts made to formulate their pro-

gressional principles. The *discantus* had led to the reduction of subjects to regular rhythm, and had also laid the foundation of counterpoint; and by the end of the 15th cent. polyphony (i.e. the contrapuntal weaving together of separate melodic parts) was on a fairly sound footing—4-part writing had been attained, and inversions, passing-notes, discords, and chromatics had arisen. The 16th cent. was an age of brilliant achievement under such men as Josquin des Prés, Lassus, Palestrina, Victoria, and Byrd. But before further progress could be made it was necessary that the limitations and prejudices of the Græco-ecclesiastic modes, which still prevailed, should be superseded. So far, chord-combinations had been regarded as incidental to polyphony. It was Monteverdi who early in the 17th cent. broke away, by using unprepared dominant sevenths and other unheard-of discords, thereby forming the transition to the new conception of chord-combinations, i.e. that a chord is a separate entity possessing tonality and value not only relatively to a coincidence of melodic parts, but intrinsically. Rameau (d. 1764) attempted to formulate the principles of root-derivation of chords and the laws of relation between roots which governed chord-progressions; and the efforts of Tartini (d. 1770) must also be mentioned. The great consummation of this period is to be found in the works of J. S. Bach (d. 1750), whose wonderful instinct for H. enabled him to evolve the science of relationship between consonance and dissonance, in such devices as passing-notes, to an unprecedented stage of advancement. Meanwhile, the incompatibility of the ecclesiastic modes with the new discoveries had been becoming more and more apparent, and the attempts at systematisation had resulted in the evolution of the modern major and minor scales. Bach was chiefly responsible for the practical application of theoretical equalisation of keys (see TEMPERAMENT) in tuning; and in these circumstances great progress was made in modulatory experiments, e.g. the invaluable device of 'enharmonic change,' which could combine 2 theoretically different notes (e.g. G# and Ab) as one and the same for the purpose of choral construction. The fundamental idea of classical H. is that of concord. The common chord (Fig. 5) or triad (A), or either of its inversions (B) and (C), called respectively the first and second, gives a perfect consonance which is correct aesthetically by reason of its finality and completeness, and scientifically according to the laws of harmonics (see H. von Helmholtz, *Sensations of Tone*, 1875). As opposed to concords, classical H. has discords, or dissonant chord-combinations, which must be resolved into their relative concords before a complete idea can be expressed; unresolved discords leave a sense of incompleteness to the ear. The most familiar discord is the dominant seventh, which is resolved into the triad of



FIG. 1. TETRACHORDS



FIG. 2. GREEK FORMS OF DIATONIC

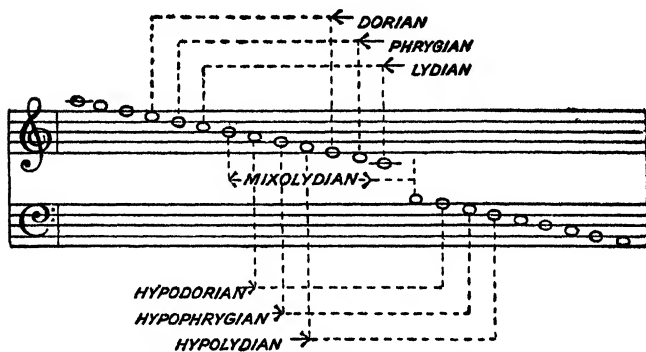


FIG. 3. RELATION BETWEEN SCALES (OR SPECIES) AND THE FULL PYTHAGOREAN SCALE

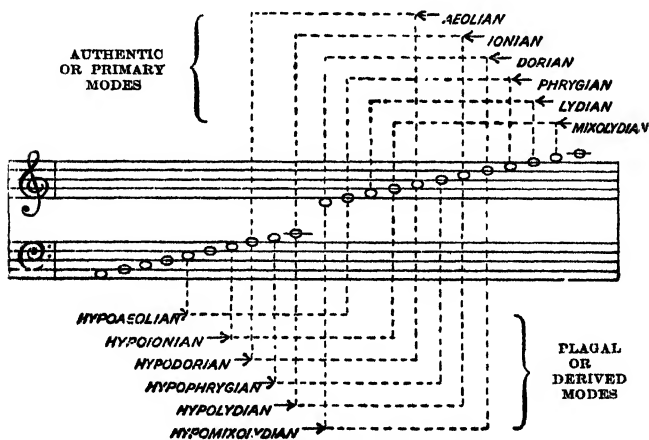


FIG. 4. MEDIEVAL CHURCH MODES

the tonic, i.e. of the keynote on which it is based (Fig. 6). This progression is the basis of classical H. To use a graphical illustration, it may be said that in academic and classical music the 'points' of a composition are plotted in concords and the 'lines' filled in by discords; in romantic music the shape is less regular, as a general rule; in the most modern music the treatment of discord may be carried to very elaborate lengths, until the notion that discord must be resolved into concord

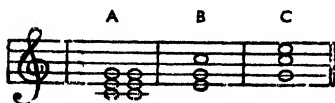


FIG. 5. COMMON CHORD OR TRIAD

breaks down altogether and every harmonic device is valued in its own right. The aesthetic or practical application of H. has always been ahead of the scientific (except in cases of Gk music); and every composer of importance has suffered at the hands of critical jurists for breaking academic laws. See H. K. Andrew's article on 'Harmony' in Grove's *Dictionary of Music and Musicians*, 5th ed. 1927-8; R. O. Morris, *The Oxford Harmony*, 1940; Walter Piston, *Harmony*,



FIG. 6. DOMINANT SEVENTH (PERFECT CADENCE)

1950; and for modern tendencies the article in Dent's *Dictionary of Modern Music and Musicians*, 1924; M. Carner, *A Study of Twentieth-Century Harmony*, 1942; A. Schoenberg, *Structural Functions of Harmony*, 1954.

Harmony, term used by Leibnitz to denote the relation existing between the monads or ultimate psychical units of his metaphysical system. He held that substance exists only in the form of atoms, each of self-contained individuality, and that the entire series is so constituted that each is at every moment in perfect H. with all the rest, though at the same time obeying the laws of its own self-determined development. This system pertains to the very highest and to the very lowest, and since God is the contriver of universal H., this world must be the best of all possible worlds. Leibnitz describes the relation of monads as 'a harmony pre-established by a contrivance of the divine foresight.'

Harmony of the Gospels, see GOSPELS, HARMONY OF THE; NEW TESTAMENT. **Harmsworth**, Sir Alfred Charles William, see NORTHCLIFFE, VISCOUNT.

Harmsworth, Sir Harold Sidney, see ROTHERMERE, VISCOUNT.

Harnack, Adolf von (1851-1930), theologian and historian, b. Dorpat, Estonia, where his father, Theodosius H., was prof. of pastoral theology. H. was prof. at Marburg, 1886-9, and at Berlin, 1889-1924. He lectured on gnosticism and the Apocalypse. The first vol. of his epoch-making work, *Lehrbuch der Dogmengeschichte*, was pub. in 1885. In it H. traced the rise of dogma. In 1893 he pub. a hist. of early Christian literature down to Eusebius, *Geschichte der christlichen Literatur bis Eusebius*; and in 1900 *Das Wesen des Christentums*. He also wrote *Die Mission und Ausbreitung des Christentums in den ersten drei Jahrhunderten* in 1902, and some interesting and important N.T. studies, trans. into Eng. as *Luke the Physician* and *The Sayings of Jesus*. H.'s distinctive characteristic is his claim for absolute freedom in the study of Church hist. and the N.T. In 1914 he was ennobled. See life by Agnes von Zahn-Harnack, 1936.

Harold, or Harald (c. 850-933), king of Norway, surnamed *Haarfaagre* (beautifull-haired), son of Halfdan the Black. According to the sagas, he vowed not to cut or comb his hair till he was sole king of Norway; 10 years later he fulfilled his oath. In 866 he made his first conquests over the petty states that divided Norway, and in 872 was master of the whole kingdom. His opponents fled to the isles of the Orkneys, Shetlands, and Hebrides. Later he was forced to make an expedition against them. He secured the Scottish isles, and his remaining rivals fled to Iceland and founded a settlement there. At the end of his reign his sons quarrelled over the succession; he assigned them lands and royal titles, leaving the chief power to his favourite son, 'Erik of the bloody axe.'

Harold (c. 936-86), king of Denmark, surnamed Blue-tooth, son of Gorm the Old. He obtained the overlordship of Norway on the death of Harold Harefag. He was baptised in 965 and tried to convert Denmark to Christianity. He was driven from his country by his son, Sweyn I (Forkbeard), the leader of the pagans. H. d. during his flight.

Harold I (d. 1040), surnamed Harefoot, king of England, the illegitimate son of Canute and Elfgifu of Northampton. The legitimate heir, Hardicanute (q.v.) was absent from England when Canute d. and H. was crowned king in 1037. H. seems to have been little more than a cipher, and he d. while Hardicanute was preparing to invade England.

Harold II (c. 1022-66), king of the Eng., son of Godwin of Wessex. While still very young he was made earl of the East Angles. He was banished with his father in 1051, taking refuge in Ireland. The family was recalled, and H. was restored to his earldom. On his father's

death (1053) he succeeded to the earldom of Wessex, and over the next 12 years gradually consolidated his hold on the gov. of the country, becoming Edward's chief counsellor. On Edward's death H. was immediately crowned king, a contemporary source saying 'he succeeded to the kingdom as the king granted it to him and as he was chosen therefor.' (Jan. 1066). William, duke of Normandy, claimed that Edward had promised the Eng. throne to him, and that H. himself had agreed to become William's man. H. was soon attacked on 2 fronts: Tostig of Northumberland, H.'s brother, with Harold Hardrada, king of Norway, sailed up the Humber and subdued York. H. defeated and killed them at Stamford Bridge, and then marched S. and engaged the Normans on the hill of Senlac, near Hastings, William of Normandy having landed with an army at Pevensey on 28 Sept. H. was defeated and killed with two of his brothers. He was the last of the Saxon kings. See F. M. Stenton, *Anglo-Saxon England*, 1943. Interesting fictional interpretations are E. Lytton, *Harold, The Last of the Saxon Kings*, 1848, and Hope Muntz, *The Golden Warrior*, 1949.

Harold III, or **Harald** (1015-66), king of Norway, surnamed **Haardraade** (the ruthless), son of King Sigurd and half-brother to Saint Olaf. When 15 years old he fled from Norway after fighting at the battle of Stiklestad (1030), where Olaf was slain. He found refuge in Novgorod, and then went to Constantinople, where he commanded the Varangian guard of the Empress Zoë; he won various victories in Italy and North Africa, and then returned home, on his way back marrying Elizabeth of Novgorod. He now allied himself with Sweyn of Denmark against his nephew Magnus, king of Norway, but in 1046 accepted half Norway as a gift from Magnus. On the death of his nephew he became king (1048). He invaded England with Earl Tostig of Northumberland, and was defeated and killed at Stamford Bridge by the Eng. Harold.

Haroun al-Raschid, or **Harun al-Rashid** (763-809), caliph of Bagdad, b. near Tehran and succeeded to the caliphate in 786. He made the Barmecide Yahya his grand vizier, and left the entire administration of his extensive dominions to him and his 4 sons. H. meanwhile devoted himself to the pleasures of life, and his court at Bagdad became a brilliant centre of all the wit, learning, and art of the Muslim world. Towards the close of his reign he developed a violent hatred of the Barmecides (q.v.), and caused the vizier and his 4 sons to be executed (803/4). H.'s affairs immediately fell into confusion, and treason and rebellion broke out. H. marched against the rebels, but d. at Tus of an apoplexy. A highly coloured but false picture of his memory is found in the *Arabian Nights* stories. See life by H. St J. B. Philby, 1933.

Harp (A.-S. *hearpe*, Old High Ger. *harfa*), musical stringed instrument which

was greatly esteemed by the ancients. The Egyptians played it from very early times, though there is no reason to suppose that they were its inventors. The Egyptian H. was bow-formed, had no front pillar, and was strung with catgut; it was of great size, often standing over 6 ft high, and the pedestal was profusely decorated with jewels and carvings; many varieties are found in ancient sculptures and paintings. The Assyrian H. resembled the Egyptian except that the sound-body was placed uppermost. Nothing definite is known about the shape of the Heb. or biblical H., but it was probably a small hand instrument bearing more resemblance to the lyre. In the earliest records of Celtic hist., the H. is given a prominent place; the old Scottish instrument was about 3 ft high and had 30 strings. One of the earliest specimens, known as the *clarsach Lamonaich* or Lamont's clarsach, was taken from Argyllshire by a lady of that family on her marriage, about 1460. Its use had recently been revived. The oldest and finest specimen of the beautiful Irish H. is contained in Trinity College, Dublin, and dates from the 14th cent.; there is a cast of it in the Victoria and Albert Museum in London. The old Welsh H. resembled the Irish one, but the modern instrument is triple-strung. A Bavarian maker, Höchbrucker, invented the single-action pedal in 1790, but it is to Sébastien Erard that we owe the power and sweetness of the modern pedal instrument. For many years he worked at the invention of a double-action pedal, and gained a great triumph on the production of his mechanism in Paris, 1810. By its means each string is capable of producing 3 notes, flat, natural, and sharp, but the tuning applies to all the octaves throughout the instrument's range; on the other hand almost endless combinations are made possible by the fact that adjacent strings make certain notes available by enharmonic change; thus, if both G₄ and G₅ are wanted together, the former may be had from the G string and the latter from the A string disguised as Ab.

Harp, *The*, see LYRA.

Harpagus, general of Cyrus the Great, the Persian monarch. He conquered the Carians, Lycians, and Asiatic Greeks about 540 bc.

Harpé, *Jean François de la*, see LAHARPE.

Harpenden, par. and urb. dist., mostly residential, in Herts, England, 25 m. from London. Sir John Bennett Lawes began his systematic experiments in agriculture at Rothamsted Park (q.v.), 1843, near by, and in 1889 provided an endowment of £100,000 for the continuance of the experiments. St George's co-educational school is situated here. Pop. 15,000.

Harper & Brothers, Amer. publishing firm, started in 1817 as a printing shop in downtown New York known as J. & J. Harper. In 1933 2 other Harper brothers joined the business and it became a book publishing firm under its present name. Later a number of magazines were added, beginning with *Harper's Monthly Magazine* in 1850. Ownership

of H. & B. remained in the family for 3 generations, until the 1890's. In 1923 the firm moved to its present location.

'Harper's Bazaar,' monthly magazine of fashion, was started in 1929 by the National Magazine Company Limited. Edited by Eileen Dickson, it includes not only complete coverage of the couture throughout the world but also topical articles written by experts on beauty, foods, wines, and travel, and fiction by to-day's leading authors.

Harpers Ferry, in of Jefferson co., W. Virginia, U.S.A., situated at the confluence of the R.R. Shenandoah and Potomac. In 1786 a U.S. armoury and arsenal was estab. there. This was seized in 1859 by John Brown (q.v.), the abolitionist, but only held till next day. In 1862 the garrison under Col. Miles surrendered after some fighting to Stonewall Jackson (q.v.). The Federal loss amounted to 12,500 taken prisoners, and 13,000 small arms. Col. Miles d. of his wounds immediately after the surrender. Pop. 830.

Harpies, or Harpyias, personifications of sudden storms which snatched away people (*Iliad* xvi. 150). Homer mentions one only, Podarge, who in the shape of a mare bore to Zephyrus the horses of Achilles. Hesiod makes them winged goddesses, but later writers spirits of evil, half maiden, half bird. In the story of the Argonauts the gods sent them to torment Phineus, by defiling or carrying off his food. See J. C. Lawson, *Modern Greek Folklore*, 1910.

Harpignies, Henri Joseph (1819-1916), Fr. landscape painter, b. Valenciennes. He became a friend of Corot (q.v.), went with him to Italy, and in 1861 he made his first great hit at the Salon with his 'Lisière de bois sur les bords de l'Allier.' He was a fine draughtsman, and his work, though showing something of the influence of Corot, is distinctive. He obtained his first medal in 1886, for 'Le Soir dans la campagne de Rome,' but his most famous picture is perhaps 'Le Saut de Loup,' 1873, bought for the Luxembourg. His work was much appreciated in England.

Harpocrates, see HORUS.

Harpocration, Valerius, Gk grammarian of Alexandria. Part of his *Lexicon* has survived: it contained notes on famous persons and events referred to by the 10 Attic Orators, as well as explaining a number of legal and commercial terms. H.'s date is uncertain: some identify him with Antoninus Verus's Gk tutor mentioned by Julius Capitolinus (*Life of Verus*, 2nd cent. AD); others maintain that he quotes from Athenaeus (q.v.), in which case he must have been considerably later. The extant portions of the *Lexicon* have been edited by W. Dindorf, 1853.

Harpischord, musical instrument which was in vogue especially in the 17th and 18th cents., and which developed into the invention of the modern pianoforte (q.v.). Outwardly it resembled that instrument in shape, though it was also made with 2 keyboards and stops; but instead of the hammer action of the piano it produced

the notes by quills fixed in the centre tongues of wooden uprights called jacks, which when the note was struck twanged or twitched the strings, thus emitting the sounds. The notes thus produced were of necessity sharp and metallic, and, though lending themselves to brilliant technical performance, it was difficult to make them expressive; but much was done to vary the tone by means of stops controlling different sets of jacks fitted with quills, leather, etc., and by the double keyboard, especially that invented by Hans Ruckers about 1640, the Ruckers of Antwerp being the most famous H. makers. The Swiss maker Tschudi settled in London early in the 18th cent. (calling himself Shudi), and he and Kirkman made many great improvements, pedals being introduced for the first time. The 'harp' stop and the 'swell,' a device worked by a pedal, were the inventions of Roger Plenius, who was the first to make a pianoforte (or lyriehord) in England. The older spinet and virginal belonged to the same family as the H. The H. held an important place in the orchestra of its time, being played always by the conductor, and it was first displaced by the composer Gluck. The last recorded occasion of its public use in England was that of the performance of the ann. 'King's Birthday Ode' at St James's Palace in 1795; but there has, in recent years, been a revival of the instrument for the authentic performance of old music. During the period when composers wrote their music on a basis of figured basses (c. 1600-1750) the harmony in operatic, orchestral, chamber, and accompanied choral and solo vocal music was invariably filled in from the figures (see THOROUGH-BASS) on a H. or (more rarely) on the organ.

Harpur, Charles, see AUSTRALIAN LITERATURE.

Harpy, or Harpy Eagle (*Harpia harpyja*), bird of prey which inhabits the tropical regions of South America from S. Mexico to Brazil, and which is variously referred by ornithologists to the hawk, buzzard, and eagle families (see FALCONIDAE). Its salient features are its powerful talons, with which it pounces on monkeys, sloths, and fawns, and its enormous hooked beak. The H., so-called after the legendary H.s. of the Greeks, has a white head, breast, and belly, save for one dark pectoral band; a black tail barred with grey, a black back, and grey dusky wings. The face is owl-like, and the head crested. In flight it is slow and heavy, as the soft feathers and small wings would lead one to expect. Too much faith must not be reposed in the fabulous tales of its voracity told by the early naturalists.

Harquebus, see ARQUEBUS.

Harpap, George Godfrey (1866-1938), publisher, b. London. After 19 years' experience with the publishing house of Isbister, he founded his own business in 1901. This was made possible by the friendship of D. C. Heath, the Amer. educational publisher, who gave him the

Brit. Empire representation of the Heath list, a happy arrangement that still continues. In 1905 G. Oliver Anderson was brought into a partnership which prospered and laid the foundations of the firm of George G. Harrar & Co. Ltd., the direction of which is still in the hands of the Harrar and Anderson families.

Harrar, or **Harar**, in and trading centre of Ethiopia, the cap. of Harrarge prov., connected by a good road to Dire-Dawa, thence with Jibuti by rail. It is built on slopes of a hill at an elevation of over 5000 ft. Exports include coffee, ghee, gums, wax, ivory, hides, and skins. It was seriously damaged in aerial bombardment in the Italo-Ethiopian war of 1935. Its capture by the Brit. forces in the It. East African campaign, in Mar. 1941, marked the beginning of the ultimate collapse of the whole of Mussolini's African colonial empire. Estimated pop. of prov. 1,600,000.

Harrier: 1. Breed of dog which hunts the hare by scent. In qualities and general appearance a H. closely resembles a foxhound, from which, indeed, it was probably at first derived. However, it is built on a smaller scale and usually is not taller than 22 in., whereas a foxhound frequently attains to 27 in. H.s. can hunt a much colder scent than their prototype, but are not so swift-footed. There are over 150 packs in the Brit. Isles, and the H.s. are especially a feature of Irish country life, where hare-hunting is a most popular sport.

2. (*Circus*) Genus of non-arboreal Falconidae (q.v.). H.s. are often called hen-harriers, because of their predilection for poultry as their prey. They have long legs and wings, insignificant beaks, an owl-like frill of thick-set feathers round the face, and soft plumage. They live on frogs, birds, snakes, and small mammals, and chiefly frequent marshy dists. At one time the *C. cyaneus*, or hen-harrier, and the *C. aeruginosus*, or marsh-harrier, were common in the Brit. Isles, but they are now more or less rare, the draining of the marshlands having deprived them of so much of the congenial habitat. H.s., including the *C. cinereus* and the *C. cineraceus*, etc., are distributed all over the world. The Amer. marsh hawk (*C. hudsonius*) is very like the hen-harrier, but, in the male bird, the lower markings are rufous.

Harriman, William Averell (1891-), Amer. administrator and diplomat. He graduated from Yale Univ., 1913. He joined Roosevelt's National Recovery Administration in 1934, becoming special assistant administrator, and is closely associated with the 'New Deal' policy. He was appointed Roosevelt's special representative in Great Britain with the rank of minister, 1941, and was special representative of the president on, and chairman of, the president's special mission to Russia, with rank of ambas., 1941. In 1942 he was chief lend-lease officer in London and member of London Combined Production and Resources Board. H. was U.S. ambas. to Russia,

1943-6; to Britain, 1946-8. He shared with Paul Hoffmann and Tom Finletter responsibility for the administration of the European Recovery Programme in its application to Britain. He was director of the Mutual Security Agency, 1951-3, and elected governor of New York, 1954. He failed to secure the Democratic nomination in 1956, though supported by ex-president Truman.

Harrington, or **Harington**, James (1611-1677), Eng. political philosopher, b. Upton, Northants. He spent some time with Charles I during his imprisonment, and on the king's death devoted himself to the composition of *Oceana*, a somewhat dull but very minutely worked-out scheme for an oligarchical rep., which had some influence on the authors of the Amer. constitution. In 1661 he was imprisoned by Charles II on a charge of conspiracy. He d. insane. See H. F. Russell-Smith, *Harrington and his 'Oceana'*, 1914.

Harrington, Sir John, see HARRINGTON.

Harrington, see WORKINGTON.

Harriot, or **Harriot**, Thomas (1580-1621), mathematician and astronomer, b. Oxford. He became tutor to Sir Walter Raleigh, who appointed him to the post of geographer to the second expedition to Virginia (1585), an account of which voyage was pub. by H. in 1588, and afterwards reprinted in Hakluyt's *Voyages* in 1600. H. virtually gave to algebra its modern form. He studied sunspots about the same time as Galileo. See H.'s *Ephemeris chrysometria* and *Artis analyticae praxi ad aequationes algebraicas resolvendas*, 1631. See also the *Harriot Papers* (ed. by S. Rigaud), 1831, and H. Stevens, *Thomas Harriot*, 1900.

Harris, Sir Arthur Travers (1892-), Brit. Marshal of the R.A.F. In the First World War he served with the 1st Rhodesian Regiment on the W. front and transferred to the Royal Flying Corps (later R.A.F.) in 1915. Group captain, 1933; air commodore, 1937; air vice-marshal, 1939; deputy chief of air staff, 1940-1; air marshal, 1941; head of R.A.F. delegation to the U.S.A., 1941; air chief marshal, 1943; member of the combined Brit.-Amer. chiefs of staff, 1942. As commander-in-chief, Bomber Command, 1942-5, he was responsible for Brit. policy in the bombing of Germany and Ger.-occupied countries of Europe. Promoted Marshal of the R.A.F., 1945. He pub. *Bomber Offensive*, 1947.

Harris, Sir Augustus (1852-96), theatre manager, dramatist, and actor. Son of a famous stage manager, he went into the theatre after an apprenticeship in the soft goods industry and showed remarkable talent. He performed miracles of stage management and also became quite a good actor. A man of tremendous vitality and ideas, he obtained a lease of Drury Lane Theatre when he had only a few pounds in his pocket and brought immediate success to that great playhouse after a period of disaster. He started a new tradition of big spectacular melodramas and equally vast and spectacular pantomimes. He introduced music-hall performers into

pantomime, bringing together Dan Leno and Herbert Campbell. At one time he controlled theatres, among them Drury Lane and Covent Garden, and many touring companies; was interested in commercial undertakings, owned a newspaper, and was a sheriff of the City of London. As such he arranged the entertainments given for the emperor of Germany on his visit to London, for which he received his knighthood. He *d.*—really of overwork—in 1896, and the general public erected a monument to his memory outside Drury Lane Theatre.

Harris, Emanuel Vincent, R.A. (1879–), architect, *b.* Plymouth, was articled there, then came to London and started practice in 1908. His prin. buildings, mostly the result of competitions, are: Glamorgan Co. Hall, Cardiff, 1908; Fire Station, Cardiff, 1912; gov. offices, Whitehall, London, 1916 (still under construction in 1958); Sheffield City Hall, 1920; Central Library and municipal offices, Manchester, 1925; Surrey Co. Hall, Kingston, 1925; Leeds Civic Hall, 1926; Somerset Co. Hall, 1932; Nottingham Co. Hall, 1935; Bristol Council House, 1935; buildings for Durham Univ., 1947; and for Univ. College, Exeter, 1930–54.

Harris, Frank (1856–1931), journalist and author, *b.* Galway, of Welsh parentage. At the age of 15 he went to the U.S.A., where he worked as bootblack, labourer, hotel clerk, and cow-puncher. Later he studied law in Kansas and was admitted to the Bar. Returning to Europe, he attended a continental univ., then entered journalism and became editor successively of the *Fortnightly Review*, the *Saturday Review*, and *Vanity Fair*. In connection with which he was imprisoned for libel. He was also founder and editor of *The Candid Friend*. During the First World War he returned to America. His books include *The Man Shakespeare*, 1909, *The Women of Shakespeare*, 1911, 5 series of *Contemporary Portraits*, 1915–30, *Oscar Wilde, his Life and Confessions*, 1920, *Bernard Shaw*, 1931, and the autobiographical *My Life and Loves*, 1923–7. He also wrote sev. plays, including *Mr. and Mrs. Davenport*, 1900, and *Shakespeare and his Love*, 1910, as well as a number of novels.

Harris, George Robert Canning Harris, 4th Baron (1851–1932), politician, administrator, and cricketer; son of 3rd baron. Educ. Eton, and Christ Church, Oxford. Under-secretary for India, 1885–6; under-secretary for war, 1886–9; and governor of Bombay, 1890–5. It was largely due to his efforts and influence as a cricketer that Kent reached a high position among the cos. He was president of the Marylebone Cricket Club (M.C.C.) in 1895, and was one of the outstanding administrators of the game. Pub. *A Few Short Runs*, 1921.

Harris, James, see MALMESBURY, EARL OF.

Harris, James Rendel (1852–1941), biblical scholar, *b.* Plymouth; educ. at Plymouth Grammar School and at Cambridge Univ. In 1882 he went to the

U.S.A., where he was prof. of N.T. Greek at Johns Hopkins Univ. 1882–5, and of biblical languages at Haverford College, 1886–92. He was curator of MSS. at the John Rylands Library (q.v.), 1918–25, lecturer in palaeology at Cambridge Univ. 1893–1903, prof. of theology at Leyden 1903–4, and Haskell lecturer at Oberlin College in 1910. His studies and works, which gave him a place among the leading N.T. scholars, included *Study of Codex Bezae*, 1890; the lost *Apology of Aristides*, 1891, an important Syriac MS. of the 7th cent. which he discovered in a convent on Mt Sinai in 1889; *The Cult of the Heavenly Twins*, 1906, and *Boanerges*, 1913, 2 books on the Dioscuri legend; *Side-lights on New Testament Research*, 1899; *The Odes and Psalms of Solomon*, 1910, a collection of primitive Christian hymns; *The Origin of the Prologue to St John's Gospel; Testimonies*, 1917–20; *Eucharistic Origins*, 1927; *The Teaching of the Apostles and the Sibylline Books*, 1900; *Fragments of Philo; The Acts of Perpetua*, 1887; *Some Syrian and Palestinian Inscriptions; Lectures on the Western Text of the New Testament*, 1894; *Letters from Armenia*, 1897; *Double Text of Tobit; The Dioscuri in Christian Legend*, 1903; *Aaron's Breastplate; Origin of the Cult of Dionysus*, 1915; *Further Traces of Hittite Migration*, 1927; and books about the *Mayflower*.

Harris, Joel Chandler (1848–1908), Amer. author, *b.* Katonton, Georgia. His father's name is not recorded in his daughter-in-law's biography of H., H. being the family name of his mother who had eloped with his father and was then deserted. The mother supported H. by sewing. As a youth he was ambitious to write and it is said that this desire was fostered by Joseph Turner, publisher of the *Countryside*, an enterprising and successful plantation paper, to which H. contributed articles of interest to juveniles. When the Civil war devastated Turner's plantation and ruined him, H. found work in a newspaper office at Macon. Thenceforward he was a journalist—a writer of light articles, a paragrapher, and inventor of 'stunts.' Later an article in Lippincott's magazine on the subject of negro folklore suggested his famous Remus stories which first appeared in the *Atlanta Constitution* in 1878, and were pub. in 1880 as *Uncle Remus: his Songs and Sayings*. For the next 25 years he returned ever and again to this character as the mouthpiece for such negro legends as he could gather, publishing them in *Nights with Uncle Remus*, 1883, *Uncle Remus and his Friends*, 1892, and *Uncle Remus and Brer Rabbit*, 1906. In the meantime he wrote other books which were not negligible, such as *The Old Plantation*, 1889, and *Free Joe*, 1887, all useful as records of life in Georgia. He also wrote a hist. of Georgia from the *Invasion of De Soto to Recent Times*, 1899. See lives by R. L. Wiggins, 1918, Julia C. Harris, 1918, and A. F. Harlow, 1941.

Harris, John (c. 1666–1719), clergyman and compiler, *b.* probably in Shropshire. He held the livings of Icklesham and

Winchelsea in Sussex, St Margaret Moses and St Mildred, Bread Street, London, and was a prebendary of Rochester (1707). He was best known as the editor of the *Dictionary of the Arts and Sciences*, 1704; and as the compiler of a *Collection of Voyages and Travels*, 1705.

Harris, Roy (1898-), Amer. composer, studied at the Univ. of California and privately. Since 1932 he has held more than half a dozen important teaching appointments. His music is austere and essentially symphonic and polyphonic rather than experimental. It includes 3 ballets, many choral works, 7 symphonies, and numerous other orchestral works, concertos, chamber music, etc.

Harris, William Torrey (1835-1909), Amer. educationist, b. N. Killingley, Connecticut. In 1873 he opened the first public school kindergarten in America, and from 1889 to 1906 was state commissioner for education. He founded in 1867 the *Journal of Speculative Philosophy*, and pub. *An Introduction to the Study of Philosophy*, 1889, and *Psychologic Foundations of Education*, 1898. See J. S. Roberts, *William Torrey Harris: a Critical Study of his Educational and Related Philosophic Views*, 1944.

Harris, par. in the Outer Hebrides, Inverness-shire, Scotland, comprising the S. part of the is. of Lewis, the adjacent is. of Killigray, Pabbay, Scarp, and Taransay, and the distant is. of St Kilda. H.-Lewis is separated from the mainland by the Minch, and to the S. is the sound of H., the only navigable channel through the Hebrides. H. is separated from Lewis by a long range of hills, and is nearly cut in two by the lochs of Tarbert. The pop. is engaged in crofting, fishing, and sheep-farming; the wool-weaving connected with the latter is done on handlooms, and the material is the noted H. tweed. Some is. weavers, though still using handlooms, are importing yarn, and their cloth does not qualify for the official stamp—an orb applied only when the tweed is woven by hand in the Outer Hebrides from virgin Scottish wool spun in the is. There are 1600 looms at work in the is. and the ann. production is over 4,500,000 yds. Area 123,757 ac.; pop. 3390.

Harrisburg, cap. of Pennsylvania, U.S.A., on the Susquehanna R., 90 m. WNW. of Philadelphia. It is named after John Harris, Quaker, who settled here in 1704. Sev. railroad bridges cross it. Among the chief buildings in the city are the court-house, gov. buildings, state arsenal, state asylum, opera-house, and sev. handsome public monuments. It became the cap. of Pennsylvania in 1812, and was incorporated as a city in 1860. It is also the see of a Rom. Catholic bishop. Coal and iron are extensively worked in the neighbourhood, and it has manufacturing of machinery, shoes, bricks, lumber products, and food products; there are also printing works and railroad shops. Pop. 89,540.

Harrismith, tn in the Orange Free State (q.v.), South Africa, cap. of the H. dist., named after Lt.-Gen. Sir Harry

Smith, governor of the Cape, 1847-52. H. has an altitude of 5250 ft and is connected by rail with Durban, Natal, 170 m. to the NW. It is a prosperous trading centre for a large part of the country lying W. of the Drakensberg Range, and has a large woollen factory. It is a leading health resort of South Africa, and is one of the best points whence to visit the Kruger National Park, the Mont-aux-Sources, and N. Basutoland.



Eric G. Meadows

TARANSAY AND THE SOUTH HARRIS HILLS FROM ULLAVAL, NORTH HARRIS

H. has golf links and a racecourse; most of the streets are planted with trees. The Dutch church is a 5-storey building with a spire. In a cave not far distant from the tn are some well-known bushman paintings. Pop. Whites, 4019; Bantu 8769.

Harrison, Benjamin (c. 1726-91), Amer. patriot, b. in Virginia. He was a delegate to the Continental Congress, 1774-8, and one of the signers of the Declaration of Independence, and was governor of Virginia, 1781-4.

Harrison, Benjamin (1833-1901), 23rd president of the U.S.A. b. N. Bend, near Cincinnati, Ohio. He was educ. at Miami Univ., and pursued the study of law; was admitted to the Bar in 1853. He took part in the Civil war, serving in the

Union army, and was breveted a brigadier-general in 1865. He was reporter of the supreme court of Indiana in 1860-2 and 1864-8, resuming his legal work after the war. He also took an interest in the campaign which resulted in the election of James Garfield as president, and in 1881 was elected a member of the U.S. Senate. He was nominated for the presidency in 1888 by the Republican party, and elected, and after his term of office America was in a condition of prosperity and on friendly terms with foreign nations. The settlement of the Bering Sea fur-seal question with Great Britain, the negotiation of a Hawaiian annexation treaty, the passing of the McKinley Tariff Bill, the meeting of Pan-Am. Congress at Washington, were all events of his presidency. He was again nominated in 1892, but failed to secure election. In 1899 he was leading counsel for Venezuela in its boundary dispute with Great Britain, and was the member for the U.S.A. at The Hague Conference the same year. He wrote *This Country of Ours*, 1897, and *Views of an Ex-President*, 1901.

Harrison, Frederic (1831-1923), author and philosopher, b. London. He was educ. at King's College School, London, and at Wadham College, Oxford, where he became a fellow and tutor. He was called to the Bar in 1858, and was prof. of jurisprudence and international law to Inns of Court 1877-9. He also worked at a codification of the law with Lord Westbury, and was placed upon the Trades Union Commission of 1867-9, becoming secretary to the commission for the digest of the law, 1869-70. He was president of the Eng. Positivist Committee, 1880-1905, as well as editor of the Positivist *New Calendar of Great Men*, writing much on Comte, of whom he was a follower. His publs. include *The Meaning of History*, 1862; *Order and Progress*, 1875; *The Choice of Books*, 1886; *Oliver Cromwell*, 1888; *Annals of an Old Manor House*, 1893, in which he gives an account of his home, near Guildford; *William the Silent*, 1897; *The Millenary of King Alfred*, 1897; *Tennyson, Ruskin, Mill, and others*, 1899; *Egyptian History in the Early Middle Ages*, 1900; *Life of Ruskin*, 1902; *Theophano*, 1904, a 'romantic monograph' of the 10th cent.; *Nicophorus, a Tragedy of New Rome*, 1906; *The Creed of a Layman*, 1907; *My Alpine Jubilee*, 1908; *Autobiographic Memoirs*, 1911; *Among My Books*, 1912; *The Positive Evolution of Religion*, 1912; and *The German Peril*, 1915.

Harrison, Jane Ellen (1850-1928), classical scholar, b. Cottingham, Yorks. She was educ. at Cheltenham and Newnham College, Cambridge, and then studied archaeology at the Brit. Museum under Sir Charles Newton. From 1898 to 1922 she was lecturer in classical archaeology at Newnham. Her two most important works are *Prolegomena to the Study of Greek Religion*, 1903, and *Themis, a Study of the Social Origins of the Greek Religion*, 1912. During the First World War,

which, to use her own words, 'shattered much of academic tradition and drove her to seek sanctuary in other languages and civilisations,' she studied Russian, and from 1917 onwards she lectured on Russian at Newnham. Among her other books are *Myths of the Odyssey in Art and Literature*, 1882, *Introductory Studies in Greek Art*, 1885, *The Mythology and Monuments of Ancient Athens*, 1890, and the autobiographical *Reminiscences of a Student's Life*, 1925. She received honorary degrees from Aberdeen and Durham.

Harrison, John (1693-1776), horologist, b. near Pontefract, Yorks; son of a



JOHN HARRISON

Engraving after a painting by King

carpenter, which trade he followed for sev. years. He invented the grasshopper escapement and the grid-iron compensation pendulum, but he is chiefly famous for his marine timekeepers, now exhibited at the Royal Maritime Museum, Greenwich. See CHRONOMETER; CLOCK.

Harrison, Julius (1885-), conductor and composer, b. Stourport, Worcestershire; studied under Bantock in Birmingham and became conductor in the Beecham (later Brit. National) Opera Company. After varied experience as a concert conductor, he directed the Hastings Orchestra from 1930 to 1940. His compositions include 3 Masses and a Requiem, choral, orchestral, and chamber music, many songs, etc., and he wrote a book on Brahms's symphonies.

Harrison, Mary St Leger, see MALET.

Harrison, Thomas (1606-60), Puritan, b. Newcastle-under-Lyme, the son of a butcher. In 1642 he enlisted in Essex's bodyguard, and was major in Fleetwood's horse at Marston Moor. He entered the 'New Model' with Fleetwood, and was

present at Naseby and Langport and at the captures of Winchester and Basing. He signed Charles I's death-warrant. From 1650 to 1651 he held chief command in England during Cromwell's absence, and after the battle of Worcester (1651) was charged with the pursuit of the fleeing royalists. He assisted in expelling the Long Parliament in 1653, and was a leading member of the Barebones Parliament the same year, being prominent for his Fifth Monarchy views. He was deprived of his commission in 1653 under the Instrument of Gov., and suffered imprisonment, 1655-6 and 1658-9, for his ideals. At the Restoration he was executed as a regicide. See life by C. H. Simpson, 1905.

Harrison, William (1534-93), chronologist and topographer, b. London, and educ. at St Paul's and Westminster schools, and at Oxford. He was rector of Radwinter in Essex from 1559 until his death, and canon of Windsor from 1586. His *Description of England* was intended to form part of 'an universall cosmographie,' planned by Reginald Wolfe, which was finally confined to the description and histories of England, Scotland, and Ireland, of which the topographical section was supplied by H., while Hollinshed (q.v.) provided the historical. It was pub. in 1577 as *The Chronicles of England, Scotland, and Ireland*, and H.'s contribution gives an invaluable view of the life and customs of Elizabethan England.

Harrison, William Henry (1773-1841), 9th president of the U.S.A., b. Berkeley, Charles City co., Virginia. He entered the army in 1791 and served till 1798, when he was elected secretary of the NW. ter. In 1800 he was created governor of Indiana, but did not enter office until 1801; and while governor he tried to prevent the sale of alcohol to the Indians. Having had sev. fruitless conferences with the Indian chiefs, he advanced against them in 1811, and gained a complete victory at Tippecanoe. From 1812 to 1813 he was actively engaged in the war with England. From 1819 to 1821 he was a member of the Ohio Senate, and of the U.S. Senate from 1825 to 1828. In 1840 he was elected president, but only acted for one month, dying of pneumonia. One of his addresses survives in *A Discourse on the Aborigines of the Valley of the Ohio*. See lives by D. B. Goebel, 1926, and J. A. Green, 1941.

Harrison, tn in New Jersey, U.S.A., in Hudson co., adjoining Newark on the E., with which it is connected by bridges. Here is located the state soldiers' home. H. has steel and iron works, and manufs. pumps, radio equipment, gases, ink, refrigerator parts, steel, and elevators. Pop. 14,000.

Harrogate, municipal bor., inland holiday resort, and watering-place in the W. Riding of Yorks, England, about 15 m. N. of Leeds. As a holiday resort it is notable for its fine hotels, extensive parks, and open spaces (430 ac., including the 'Stray' of 200 ac.), as a centre for music and drama, and for the generous provision

for every kind of sport and pastime. In recent years H. has also become very popular as a conference tn, as, besides the amenities mentioned above, it has some fine meeting halls, particularly the Royal and Lounge halls, and the Sun Pavilion in the Valley Gardens. It has become a centre for trade fairs, and the permanent showground of the Great Yorkshire Show, held in July, is now at H. As a health resort it is famous for the natural mineral springs (sulphurous, saline, and chalybeate) which are used both for drinking and bathing, in the treatment of rheumatic, skin, heart, and allied complaints. The Royal Baths, where all waters and treatments are available, as well as all the latest methods of physiotherapy, is a superbly equipped modern building, which was further extended in 1939. For in-patients there is the Royal Bath Hospital, which is a centre for research into the cause and cure of rheumatism. Included amongst the ann. events which attract large numbers of visitors are the open tennis tournament (May), the festival of music (July), and the professional golf tournament (July). Queen Ethelburga's School and Harrogate College are schools for girls. The bor. was incorporated in 1884, and the boundaries extended in 1900, and again in 1938. Pop. 51,290.

Harrow, or Harrow-on-the-Hill: 1. Bor. of Middlesex, England, comprising the anct. pars. of H. Pinner, and Stanmore (q.v.), and the dist. of Wealdstone (q.v.), altogether 12,500 ac. in extent, the largest and most populous dist. in the co. The boundaries of the three par. divs. of H. stretch beyond the bor. Wembley (q.v.), formerly in the par. of H., now forms a separate bor. Pop. (of the bor.) 217,000.

2. H. tn is near the centre of the co. on a prominent hill at whose summit is the par. church, consecrated by Anselm in 1094. The earliest parts of the present building date from c. 1130. The name H. is derived from O.E. *hearg*, 'heathen temple,' which may have been where the church now stands. The manor of H. belonged to the archbishops of Canterbury almost continuously from 767 until 1545, when it was surrendered to Henry VIII; since then it has had various owners. H. was an important vil. in mediæval times, and a fair was estab., 1262, but declined from the mid-16th cent. until the opening of the free school in 1611. See HARROW SCHOOL.

Harrow School, public school for boys, founded in 1571 by John Lyon, a wealthy yeoman of Preston near by, to whom Queen Elizabeth granted a charter. It was originally intended for the education of poor boys of the par., but the founder's statute of 1590 provided also for the admission of 'so many foreigners as that place can conveniently contain,' which has resulted in the institution becoming one of the great schools of England. The building was first opened for scholars in 1611, and since then various new buildings have been added, the chief being the

chapel, 1857, the Vaughan Memorial Library, 1863, and the speech room, 1877, where a brilliant ceremony is held every summer term. The fourth form room, dating from 1611, contains the names, out in the panels, of famous pupils, including Byron, Robert Peel, Sheridan, Palmerston (Temple), and Winston Churchill. Seven Eng. prime ministers have been educ. at H. The education given is a general one, and includes classics, mathematics (made compulsory in 1837), modern languages (introduced 1851-5), Eng. literature and hist. (begun c. 1869), etc. The old div. into classical and modern sides has been superseded by a system in which the subjects are taught in forms and divs., but full provision is made for the study of the subjects of both the former sides. Archery, for which the founder instituted a prize of a silver arrow to be shot for annually on 4 Aug., was abolished in 1776, and cricket, football, etc., have taken its place; the cricket match played every year at Lord's against Eton dating back to 1818. Since the Public Schools Act of 1868, the gov. of the school has been in the hands of a council chosen by the lord chancellor, the univs. of Oxford, Cambridge, and London, the Royal Society, and the assistant masters. The number of boys averages 600.

Harry, Blind, or Henry the Minstrel (d. 1492), poet, b. probably in Lothian, of which he uses the dialect. There are records of his receiving 3 ann. payments of 18s. from James IV. Blind from birth, he collected the popular traditions about the Scottish national hero, Wm Wallace (q.v.) in *Wallace*, a poem of some 12,000 lines of heroic couplets. It shows some knowledge of Lat. and of Scottish topography, but its historical accuracy is often in doubt. The poem was extremely popular throughout Scotland both in its original form and in the 'modernised' version of Hamilton of Gilbertfield (q.v.). It was ed. by J. Moir for the Scottish Text Society, 1885-9. See G. Neilson, *Blind Harry's Wallace*, 1910.

Hart, Sir Robert (1835-1911), administrator, b. Portadown, co. Armagh, and educ. at Queen's College, Belfast. He was nominated for the consular service in China in 1854. In 1859 he joined the new Chinese imperial maritime customs service, and became inspector-general in 1863, a post he held nominally till his death, having handed over his powers to a board of Chinese officials in 1906. To him was due the settlement of China's troubles in Formosa, and on the Tonking frontier with France in 1885. He pub. *These from the Land of Sinim*, 1901, a description of China and its people. He was made a baronet in 1893.

Hart, Solomon Alexander (1806-81), artist, b. Plymouth; spent early years as engraver's apprentice and miniature painter. Made his name as a painter of historical scenes and characters. R.A., 1840. Appointed prof. of painting in the Royal Academy in 1854, and subsequently librarian. Works include 'Henry I receiving Intelligence of the Death of

his Son,' 'Milton Visiting Galileo in Prison,' 'Wolsey and Buckingham,' and 'Lady Jane Grey in the Tower.'

Hart, male of *Cervus elaphus*, the red-deer, a ruminant ungulate mammal belonging to the Cervidae; hind is the term for the female.

Hartal, form of a political boycott in India, including the closing of all shops and suspension of other normal occupations, as a sign of national mourning.

Harte, Francis Bret (1839-1902), Amer. author, who wrote under the name Bret Harte, b. Albany, New York state. He had an adventurous career, during which he served as a schoolmaster, a miner, and a compositor. His leanings, however, were always towards journalism, and at the age of 18 he obtained an engagement on a San Francisco paper, to which he contributed his early stories. In 1864 he began to write his *Condensed Novels*, and 4 years later he founded the *Overland Monthly*, in which he printed his best-known short tales. Secretary of the Mint at San Francisco from 1864 until 1870, in 1878 he went as U.S.A. consul to Crefeld in Prussia, 2 years later being transferred to Glasgow. In 1885 he retired, and spent his remaining years in London. The *Condensed Novels* pub. in book form in 1867 were much appreciated, and still rank as masterpieces of parody, his skit on Disraeli being second only to Thackeray's *Codlingsby*. 'The Heathen Chinese' (correct title 'Plain Language from Truthful James,' and first pub. in *The Overland Monthly*, in Sept. 1870) won him a high place as a humorous poet, but it is as the author of short sketches of mining life that he became famous and is still best remembered. He threw over the rough Californian life of those days a glamour that fascinated the whole world, and 'The Luck of Roaring Camp,' 'The Outcasts of Poker Flat,' and 'Tennessee's Partner' are but a few of those that evoked high praise. While not disguising the evil in men, he had the gift of showing that even villains had good in them, and this he brought out without outraging nature or being mawkish. His later work was poor, but these stories will long keep his name fresh. His *Guy Heavystone* is a parody of the 'muscular hero' of the novels of G. A. Lawrence. There are biographies by T. E. Pemberton, 1903; H. C. Merwin, 1911; and G. R. Stewart, 1931. See also L. L. Hazard, *The Frontier in American Literature*, 1927.

Hartebeest (Hartbeest), Boer name applied throughout South Africa to a large antelope of the genus *Beubalus*, on account of its fancied resemblance to a stag. It is characterised by its reddish colour, with black markings on the forehead and nose, long horns, which diverge from each other in the form of a V with tips turned backwards at right angles, and long face with a naked muzzle. It stands about 4 ft at the withers, and is one of the swiftest of the antelope family. The H. is really the *Beubalus* or *Alcelaphus caama*, and is found in South Africa and as far N. as Mashonaland and Matabeleland, but

the name is extended to include all the numerous members of the same genus found throughout Africa and even in Syria. See ANTELOPE.

Hartford, state cap. and co. seat of H. co., Connecticut, U.S.A., on the Connecticut R., 60 m. from Long Is. Sound. It is the head of navigation, the distributing point for the Connecticut valley, and a commercial, industrial, and financial centre; it is also noted for its insurance business, being one of the leading centres in the world. There are various manufs., including firearms, typewriters, aeroplane parts, metal products, electric machinery and vehicles, bicycles, cyclometers, steam-engines, and boilers. The tn has also a large number of handsome and notable buildings. Trinity College, H. Seminary Foundation, univ. of Connecticut schools of law and insurance, Hillyer Colleges, state trade school, and an art school are here. The first settlement was made by the Dutch in 1633, and, in 1635 and 1636, Eng. from New Town (now Cambridge, Massachusetts) settled here. The city was chartered in 1784. Pop. 177,390.

Hartford Convention, gathering held in 1814-15 to discuss measures for securing New England interests against the S. and W., especially with regard to the war of 1812. The Federalists opposed the war on sev. grounds, their chief objection being that it was destroying all Amer. commerce in order to punish Great Britain for crippling a part of it. Thus all through the war they harassed the gov., but by 1814 the annoyances of the war had become intolerable, and a convention was called. This met at Hartford, and George Cabot, of Massachusetts, was chosen president. Various proposals were made, but before anything definite could be arranged a satisfactory peace was made and all disasters were forgotten in the blaze of the battle of Orleans. But the fact remains that the delegates practically advocated that for which the S. slave-holding states fought years later—the right to secede. Their programme brought them and their party into odium.

Harthaenut, see HARDICANUTE.

Harthau, Ger. vil. in the dist. of Karl-Marx-Stadt, 3 m. S. of Karl-Marx-Stadt (q.v.), with textile manufs. Pop. 7000.

Hartington, Lord, see DEVONSHIRE, 8th DUKE OF.

Hartland, vil. and par. of N. Devon, England, 13 m. SW. of Bideford. Close by is H. Point, at the S. end of Barnstaple Bay. There is a lighthouse. Pop. 1500.

Hartlepool, municipal bor. and port in the SE. corner of the co. of Durham, England. The tn stands on a headland (Hertness) nearly surrounded by the sea, and has an excellent harbour and fine docks, the harbour being protected by a breakwater, 1320 ft long. The prin. trades of the port are coal exporting and timber importing, and the chief industries have been shipbuilding, fishing, and heavy engineering. In recent years a trading estate has been estab., partly in H. and partly in the neighbouring W. H. on a site

of some 100 ac., and a number of new light industries have been estab. The tn possesses excellent facilities for the fishing industry, and all types of trawlers and other fishing craft are able to enter the harbour, and approach the quay at all states of the tide. There is excellent access to the quay both by road and rail, and good facilities for repair work, coaling, supply of stores, etc. There is an up-to-date ice factory on the quayside. A new lighthouse was built on the Hough promontory after the First World War on the site of one built in 1847 which had been removed in the war. There are also 2 other lighthouses at W. Harbour and the old pier head respectively.

The feature of H. is the par. church of St Hilda, erected about 1185-1215 near the site of a religious house founded in the 7th cent. There are many traces of an earlier church or churches on its site, and the Norman doorway is undoubtedly earlier than the rest of the church. The exterior is remarkable for its heavy tower and huge flying buttresses. The nave consists of 6 unequal arches on each side, supported by magnificent columns, and a clerestory runs the length of both chancel and nave, the arcade in the chancel being particularly beautiful and the capitals of the shafts of exquisite design. The chancel was restored in 1927. The de Brus chapel is, from the historic standpoint, the most important part of the church; for here stands the tomb which is believed to hold the remains of the 4th Robert de Brus or his son Wm. The church registers date back to Elizabeth I's reign. Other churches include Holy Trinity, which serves a new par. created in the middle of the 19th cent. in consequence of the growth of the tn, and a Rom. Catholic church built in 1850. St John's Presbyterian church (1882) was destroyed in the Second World War.

The name 'Hartlepool' is explained on the assumption that it is derived from Teutonic 'hart' or forest (discoveries of large buried oaks have been made), with the addition of 'in-pol,' i.e. 'in' or 'near' 'the pool or sea,' to distinguish it from the still more anct par. of Hart. According to Bede, an Irish princess, later called St Bega or Hieu, founded a monastery near the site of the present par. church c. AD 640, under the auspices of St Aidan. At the Conquest large properties at Hart and Hertness passed to Robert de Brus, one of William I's followers. Wm de Brus, lord of Annandale, and son of the 4th Robert de Brus, obtained a grant from King John empowering him to hold 'a market upon Wednesday every week at this manor of Hertlepole.' H. received its charter of incorporation from King John in 1200, which made it the only corporate tn in the co. palatine of Durham to receive its charter direct from the Crown. The right to elect a mayor was granted in 1230, but the record of mayors does not date back beyond 1315. In 1593 Queen Elizabeth granted a new charter, and Queen Victoria granted one in 1841 and another in 1850. In the 18th cent. H.

sank to the state of a mere fishing vill., and even the par. church was allowed to fall partly into ruins. A century later, however, the coming of the railway brought great prosperity to the tn. In the First World War, when Ger. vessels bombarded the coast of Yorks and Durham on a misty morning of Dec. 1914 H. suffered great damage. The war memorial in Redheugh Close shows that 351 men of the navy, army, and mercantile marine, and 52 men, women, and children were killed in this bombardment. Although essentially an industrial tn, H. has a fine promenade, open-air bathing pool, and facilities for games, etc. With W. H. (q.v.) the bor. forms the parl. constituency of the H.s. Pop. 17,217.

Hartley, David (1705-57), philosopher, b. near Halifax. He was intended for the Church, but took up medicine, practising as a physician at Newark, Bury St Edmunds, London, and Bath. He is chiefly remembered by his *Observations on Man*, 1749, in which he upheld the theory that the phenomena of the mind, memory, emotions, and reasoning were the direct result of molecular nervous vibrations. In his elaborate treatise he may be said also to have founded a school of thought based upon the theory of association of ideas. Though his system has long been discarded, its main ideas have continued to influence thought and investigation. See S. T. Coleridge, *Biographia Literaria*, 1817; G. S. Bowes, *Hartley and James Mill*, 1881.

Hartley, Leslie Poles (1895-), novelist, b. Peterborough. He was educ. at Harrow and Balliol College, Oxford, and during the First World War held a commission in the Norfolk Regiment. His first novel, *Sinonetta Perkins*, 1925, was followed by *The Shrimp and the Anemone*, 1944, a story about children who reappear as grown-up characters in *The Sixth Heaven*, 1946, and *Eustace and Hilda*, 1947, which was awarded the Tait Black Memorial Prize. Later novels are *The Boat*, 1950, *My Fellow Devils*, 1951, *The Go-Between*, 1954, which won the Heinemann Foundation Award, *A Perfect Woman*, 1955, and *The Hiring*, 1957. In 1956 he was awarded the C.B.E.

Hartley, tn in Southern Rhodesia, 68 m. by road from Salisbury. A progressive centre of a large farming and mining dist., including coal. Chrome processing and a large cotton textile mill have been estab. in H. Cotton, tobacco, and maize grow well in the dist. Pop.: Europeans, 400; Africans, 1400.

Hartlib, Samuel (c. 1600-c. 1670). Eng. writer on education and an agriculturist, the son of a Polish merchant, b. Elking in Prussia. He came to England about 1626, and became acquainted with Milton, who dedicated his *Tractate on Education*, 1644, to H., and with Sir Wm Petty, of whose *Two Letters*, 1647 and 1648, he was the occasion. See H. Dicks, *Biographical Memoir*, 1865; G. H. Turnbull, *Samuel Hartlib*, 1920; and *Hartlib, Dury, and Comenius: Gleanings from Hartlib's Papers*, 1947.

Hartmann, Karl Robert Eduard von (1842-1906), Ger. philosopher, b. Berlin. He was educ. for the army, but was obliged to quit the service in 1865, and turned his attention to philosophy. His first book, *The Philosophy of the Unconscious*, appeared in 1869, and met with great success, owing to its originality as well as its interesting contents. H.'s Unconscious is the Absolute of Ger. metaphysicians; his teaching is a combination of the metaphysics of Hegel, Schopenhauer, and Schelling, the Unconscious playing the role of creator and of providence. H. pub. books on ethical consciousness, the development of the religious consciousness, and Ger. aesthetics, as well as criticisms of contemporary philosophies and defences of his own system, among which may be mentioned *Ethical Consciousness*, 1879, *Aesthetics*, 1886-7, *Lotze's Philosophy*, 1888, *The Philosophy of Religion*, 2nd ed., 1888, and *Critical Grounds of Transcendental Realism*, 1896. He was a pessimist as regards the inevitable misery of existence, thinking that happiness is neither attainable here, now, nor hereafter, but an optimist in that he was a champion of evolutionary progress. See L. Ziegler, *Das Weltbild Hartmanns*, 1910; K. O. Petraschek, *Die Logik des Unbewussten*, 1926; and D. Brinkmann, *Probleme des Unbewussten*, 1943.

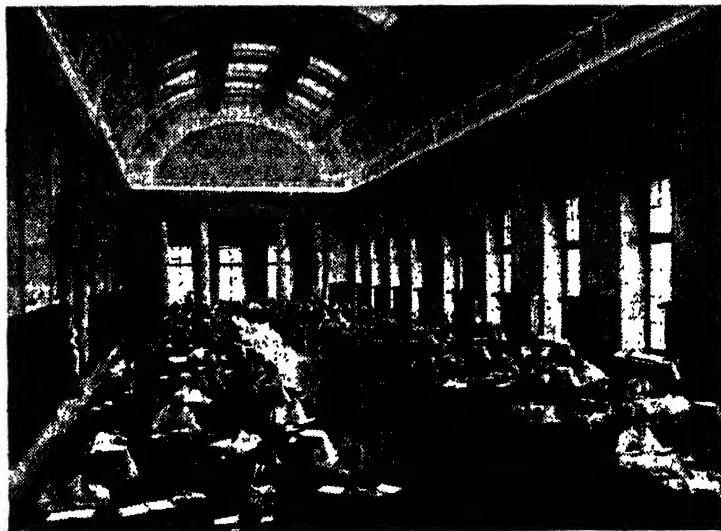
Hartmann von Aue (c. 1170-c. 1210), Ger. poet, b. in Swabia. He took part in a crusade in 1197, and is praised by Gottfried von Strassburg in his *Tristan*, but both the date of his birth and that of his death are uncertain. He pub. 4 poems: *Erec*, which relates the legend reproduced in Tennyson's 'Geraint and Enid' in *Idylls of the King*; *Gregorius*, a narrative poem of the early life of Pope Gregory the Great; and *Der arme Heinrich*, one of the most delightful specimens of medieval Ger. poetry; and *Iwein*, another Arthurian romance. His work was largely adapted from the Fr., *Erec* and *Iwein* being free translations of epics by Chrétien de Troyes, and *Gregorius*, too, was taken from a Fr. epic; but, in spite of this fact, H. ranks high as a poet of the Middle High Ger. period, and his works exhibit a delicacy of feeling and a beauty of diction rarely found in writers of the time.

Harty, Sir Hamilton (1879-1941), Irish pianist, composer, and conductor, b. Hillsborough, Co. Down. Appointed organist in an Antrim church at the age of 12. Later, in Dublin, he came under the influence of Michele Esposito at the Royal Irish Academy of Music and, in London, he soon became famous as an accompanist. At the Feis Ceoil or Irish music festival, he obtained many successes in the composers' competitions. His wife, Agnes Nicholls, was chiefly instrumental in making his songs popular; his setting of Keats's *Ode to a Nightingale* was sung by her with great success at the Cardiff Festival, 1907. His works at first showed the influence of Irish folk melodies, notably in his *Irish Symphony* (an early work, revised in 1923), and *With the Wild*

Geese, performed in 1910, but he became more cosmopolitan in later years. His concerts with the London Symphony Orchestra proved him one of the most brilliant conductors in England, and he afterwards became permanent conductor of the Hallé Orchestra, Manchester. Knighted 1925, he resigned from the Hallé Orchestra, 1933. Other works include a violin concerto in D minor, 1909; *The Mystic Trumpeter* for voices and orchestra, 1913; an orchestration of Handel's *Water Music*; and *A John Field Suite*, 1939.

observation of the entrails of animals. They also interpreted all portents or unusual phenomena of nature, and were especially employed to deal with cases not mentioned in the pontifical or Sibylline books, prescribing the offering necessary to propitiate the god. Of Etruscan origin, they were abolished by Constantine in AD 337. As a class they ranked below the augurs, being paid; and although the art was of great importance it never formed part of the state religion.

Harvard, John (1607-38), clergyman, founder of Harvard Univ. B. in Eng-



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MAIN READING ROOM IN THE WIDENER LIBRARY, HARVARD UNIVERSITY

Hartz Mountains, see HARZ.

Harzenbusch, Juan Eugenio (1806-80), Sp. dramatic poet, b. Madrid, and educ. for the Church. He began dramatic work by translating and recasting existing plays, and became famous with his romantic play *Los Amantes de Teruel*, 1837. His next productions were *Doña Mencía*, 1839, *Alfonso el Casto*, 1841, and, in 1845, *La Jura de Santa Gadea*. He became director of the National Library at Madrid in 1862, and was elected to the Sp. Academy. He also wrote lyrical poetry, literary criticism, and prepared eds. of the Sp. classics, such as Tirso de Molina and Calderón. See A. S. Corbière, *Juan Eugenio Harzenbusch and the French Theatre*, 1927.

Harun-al-Rashid, see HAROUN AL-RASHID and ABBASIDS.

Harpisces, class of soothsayers of ancient Rome, who foretold events chiefly by the

land, he was entered as a pensioner of Cambridge Univ., 1627; graduated B.A., 1631; M.A., 1635. He emigrated to America, and was made a freeman of the colony of Massachusetts, 1637. He d. at Charlestown on 14 Sept. 1638. Of his fortune of £1600, about one-half was left for the founding of the famous college which bears his name; but H. also left to the college a library of 400 books, the quality of which points to the taste of a scholar. A monument to his memory was laid in the burial ground of Charlestown by the alumni of the univ., and formally inaugurated on 26 Sept. 1828 by the Amer. statesman and orator, Edward Everett.

Harvard University, at Cambridge, Massachusetts, U.S.A., was founded by the general court of Massachusetts Bay Colony on 10 Oct. 1636, and named Harvard College in honour of John

Harvard (q.v.), who bequeathed to it £750 and his library. The first building was erected in 1637, and the first class was graduated in 1642. Until 1788 the only degrees were bachelor and master of arts. Since 1650 the college (and, later, univ.) has been governed by a self-perpetuating corporation (president, treasurer, and 5 fellows), subject to confirmation by the board of overseers. The univ. came into existence in 1780, and the various divs. as follows: medical school (Boston), 1782; law school, 1817; divinity school, 1819; school of dental medicine (Boston), 1867; Bussey Institution (agriculture and horticulture—Jamaica Plain), 1871; graduate school of arts and sciences, 1872; graduate school of business administration (Boston), 1908; school of public health; graduate school of design; graduate school of education; graduate school of public administration. Among the profs. in the middle of the 19th cent. were 3 of the brightest stars in the Amer. literary firmament of the period, H. W. Longfellow, Oliver Wendell Holmes, and James Russell Lowell.

Other univ. institutions are the botanic garden, 1807; Gray Herbarium, 1864; Arnold Arboretum (Jamaica Plain), 1872; univ. museum (founded 1859 by Louis Agassiz); Peabody Museum of Amer. Archaeology and Ethnology, 1866; Semitic Museum, 1889; Fogg Art Museum, 1895; Germanic Museum, 1902; astronomical observatory, 1843 (with a branch station since 1927 at Bloemfontein, South Africa); the H. U. press. Under the presidency (1869–1909) of Charles W. Eliot the college was noted for its elective system. His successor (1909–33) was A. Lawrence Lowell. The univ. library contained 5,700,000 vols. and pamphlets in 1953. The teaching staff numbered 3120 in 1955, and the students 10,364. In addition were 1434 women at the affiliated Radcliffe College (founded 1879 and known under its present name since 1894), who had to meet the same requirements for admission and for degrees as the men of Harvard. They were served by the same teaching staff.

Harvest and its Customs. H. (from the A.-S. *haerfest*, autumn) is the season for the gathering in of the crops, and has been regarded as a period of rejoicing from time immemorial. The Jews celebrated the feast of Pentecost as their H. festival, the Romans held feasts in honour of Ceres, and the Druids kept their feast on 1 Nov. Before the Reformation 1 Aug., or Lammas Day, was generally considered the first day of the H. festival in England, and was marked by the presentation of a loaf made of new wheat in the churches by every member of the congregation. Afterwards the feast of ingathering, known in Scotland as the 'kern', was a secular method of celebrating the close of the H. This still survives in some places, but the modern general H. festival is rapidly superseding it. It is recorded in *The Folk-lore of North England*, 1878, that in the N. part of Northumberland at the close of the H., when the last sheaf of corn

is set on end, the 'kern' is celebrated. An image is crowned with wheat-ears and dressed in a white frock and coloured ribbons, and hoisted on a pole. All the reapers then crowd round their 'kern-baby,' or 'harvest-queen,' and go to the barn where a supper awaits them. In Scotland the last sheaf is called the 'maiden,' and the youngest girl in the H.-field is supposed to have the privilege of cutting it. But in the N.E. of Scotland it is known as the 'calleach' (old woman), and is dressed up as such, being placed at the head of the table at the H. feast. In Herefordshire a final handful of grain was left uncut, but was tied up and given the name of a 'mare.' The reapers then threw their sickles at it to cut it down, the successful one crying out 'I have her! A mare, a mare, a mare!' A similar practice to that of crying the 'mare' was that of the 'cripple goat' in the Isle of Skye, and in Devonshire the last handful of the standing grain is still called the 'nack,' or 'neck.' In Russia, the last sheaf is or was known as the 'bastard,' and a boy is wrapped in it, the woman who binds it being the 'corn-mother.' H. rites are common in primitive societies throughout the world.

Harvest-bug, or Harvest-mite, common name for mites of the family of Trombididae, of the order Acari of the class Arachnida. At one time they were regarded as a distinct species (*Leptus autumnalis*), but are now known to be the 6-legged larval forms of sev. species of the genus *Trombidium*. They are minute scarlet or rusty-brown mites, which are found in enormous numbers on gooseberry bushes, grass, and low herbage in the summer and autumn. They are parasitic, and especially liable to attack man, causing intense irritation by lodging in places where the skin is thin, such as behind the knees or between toes. After a certain time they leave their host and drop to the ground when they feed upon minute insects. The best remedy is to destroy them by applying turpentine, ammonia, or spirits of wine to the affected part. See MITES.

Harvest-fly, species of *Cicada* (q.v.).

Harvest Mouse, see MOUSE.

Harvester-spiders, or Harvest-men, so called on account of their abundance in the late summer or early autumn, are Arachnids of the order Opiliones, referable to various species of the family Phalangidae. They can easily be distinguished from spiders because they have no waist between the cephalothorax and abdomen, and have extremely long thin legs. They feed upon small insects and spiders, and lay their eggs in autumn, which hatch out in the following spring or early summer. H. especially abound in temperate countries of the N. hemisphere, but are also common in India.

Harvey, Gabriel (c. 1545–1630), poet and critic, b. Saffron Walden, Essex. Educ. at Christ's College, Cambridge. became a fellow of Pembroke, where he formed a lifelong friendship with the poet Spenser. Pedantic and strongly attached to classical

models, he tried to convert Spenser to the principle that Eng. poetry should dispense with rhyme and be written in Lat. metres; he himself claimed to be the originator of the Eng. hexameter. His conceited and quarrelsome nature led him to attack Robert Greene (q.v.) in *Four Letters and Certain Sonnets*, 1592, and to carry on an acrimonious and unedifying controversy with Thomas Nashe (q.v.), to which he contributed *Pierce's Supererogation*, 1593, and *The Trimming of Thomas Nashe*, 1597, the latter having the best of the exchanges with *Have With You to Saffron Walden*, 1596. H. also contributed to the Martin Marprelate controversy. His *Letter Book* was pub. in 1884, and his *Complete Works* ed. by A. B. Grosart, 3 vols., 1884-5. See E. G. Harman, *Gabriel Harvey and Thomas Nashe*, 1923.

Harvey, Sir George (1806-76), painter; president of the Royal Scottish Academy, 1869-76. He painted pictures illustrating the hist. and daily life of the Scottish nation, among which is 'Covenanters Preaching.' Also a painter of landscape.

Harvey, George. Brinton McClellan (1864-1928), Amer. publisher and diplomatist, b. Peacham, Vermont, U.S.A. Began work as a newspaper reporter. He then went into the electric railway business in the U.S.A. and Cuba, and made a fortune. In 1899 he bought the *North American Review* and ed. it until 1926. He became president of the book-publishing firm of Harper & Bros., and from 1902 to 1913 ed. *Harper's Weekly*. Friends made the claim for him that he was an Amer. Warwick who made presidents. In 1910 he helped bring about the nomination and election of Woodrow Wilson as governor of New Jersey. He then began an active campaign to bring his name before the nation as a possible president. But in 1916 H. opposed the re-election of Wilson, and in 1918 he started *Harvey's Weekly*, which indulged in bitter criticism of the president when he sought to bring the U.S.A. into the League of Nations. H. was instrumental in bringing about the nomination of Senator Harding for the presidency by the Republicans in 1920. Harding showed his gratitude by naming H. as ambas. to the Court of St James's in 1921.

Harvey, Martin, see MARTIN-HARVEY.
Harvey, William (1578-1657), physician and discoverer of the circulation of the blood, b. Folkestone, Kent. He was educ. at Canterbury and Cambridge, and travelled through France and Germany to Padua, the most famous school of physic of that time. In 1607 he was elected a fellow of the College of Physicians, and in 1609 was appointed physician to St Bartholomew's Hospital. In 1615 he was made Lumleian lecturer at the College of Physicians, where in 1616 he made known his theory of the circulation of the blood, publishing his essay on the subject, *Exercitatio anatomica de motu cordis et sanguinis*, 1628, the most important book in the hist. of medicine. He showed that the blood coming into the right auricle

from the vena cava, and passing thence to the right ventricle, is pumped out to the lungs through the pulmonary artery and comes thence by the pulmonary veins to the left ventricle. It is then pumped out to the body. It is carried out by the arteries and comes back by veins, so performing a complete circulation. It is almost impossible to exaggerate the importance of this work, which immortalised H. He also pub. a valuable work on embryology, *De generatione animalium*, 1651. He was physician to James I and Charles I and was in 1654 offered the presidency of the College of Surgeons but declined owing to age and infirmity. See



WILLIAM HARVEY

R. Willis (trans.), *Anatomical Disquisition on the Motion of the Heart and Blood*, 1848 (Everyman's Library, 1907); Eng. trans. of his *Works* by R. Willis, 1848, includes a life; biography by D'Arcy Power, 1897; R. Hutchinson, *Harvey the man, his method, etc.*, 1931; G. L. Keynes, *Personality of William Harvey*, 1949.

Harvey, city in Illinois, U.S.A., adjoining Chicago on the S., manufacturing Diesel engines, road machinery, stoves, etc. Pop. 20,700.

Harveyised Steel, see STEEL, HARVEYISED.

Harwich, municipal bor. and seaport in Essex, England, on a small peninsula at the confluence of the Stour and the Orwell, 70 m. N.E. of London. Dovercourt is the residential quarter of H., and is a favourite seaside resort. H. is one of the chief Eng. ports for continental passenger traffic. It has been a fortified port since the time of James I, and was the scene of a naval engagement between the Dutch and Eng. in 1666. It has been an important trading centre since the 14th cent. Pop. 14,590.

Hasta, see *ASTI*.

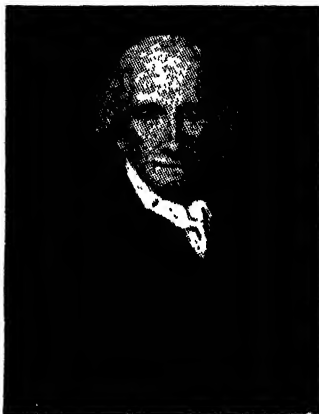
Hastings, Francis Rawdon (1754-1826), 1st Marquess of (1817), soldier and administrator. b. in Co. Down, Ireland, the son of Sir John Rawdon of Moira; later earl of Moira; educ. at Harrow and Oxford, and entered the army. From 1775 to 1782 he was on service in the Amer. war, fighting at Bunkers Hill, Brooklyn, White Plains, Camden, Charleston, etc., and was created a peer, as Baron Rawdon, on his return in 1783. In 1794 he fought against the Fr. in Flanders; was appointed commander-in-chief in Scotland, 1803; became master-general of the ordnance, 1806; and governor-general of India in 1813. The chief events of his administration were the wars against Nepal (1814-16) and the Mahrattas and Pindaris (1817-18). He retired in 1823, and was appointed governor of Malta in 1824.

Hastings, Sir Patrick Gardiner (1881-1952), lawyer. Educ. at Charterhouse. He was Labour M.P. for Wallsend, 1922, and again in 1924, when he became attorney-general for the first Labour Gov. in England. Pubs.: *The River*, 1925; *Scotch Mist*, 1926, and *Escort*, 1942 (plays); *Autobiography*, 1948; *Cases Famous and Infamous*, 1950.

Hastings, Selina, see HUNTINGDON, SELINA, COUNTESS OF.

Hastings, Warren (1732-1818), 1st governor-general of India, went out in 1750 to Calcutta, where the influence of his uncle had secured for him a cadetship in the East India Company's service. He rose rapidly, and became a person of such considerable importance that 11 years after his arrival in the country he, having already filled other posts with credit, was appointed a member of the Calcutta council. In 1764 he returned to England. Unlike most of his colleagues, he had made no attempt to amass a private income, and had nothing but his savings to live upon, and these were so inconsiderable that they were already exhausted when, in 1769, he accepted the Company's offer to go out to Madras as second in council. Two years later he was promoted to the governorship of Bengal. He now fulfilled the hopes of the directors at home, and proved himself a wise and far-seeing administrator. He instituted reforms, both in the gov. of the prov. and in the law courts, that were taken as models by his successors. He upheld treaty rights and removed abuses, but was vigorously opposed by some members of his council, his most bitter opponent being (Sir) Philip Francis, whom in 1780 he wounded in a duel. In 1785, having done magnificent work, he resigned his office and returned to England. At once an agitation was set on foot by Francis and others, who enlisted the support of Burke, and he was impeached in 1788 for corruption and cruelty. The trial dragged on for 7 years, when he was acquitted on all counts. His expenses in connection with it amounted to £70,000, his entire fortune. Thereupon the East India Company, very rightly, but to the great indignation of Burke, granted

him a handsome pension, which enabled him to fulfil his long-cherished dream of repurchasing the family estate of Daylesford. In later days, largely owing to the kindly influence of the prince regent (afterwards George IV), he was reinstated in popular opinion, though his impeachment was never officially reversed. Mill, the historian of India, declared that 'few men would be found whose character would present a higher claim to indulgence than his,' and this view is now generally accepted. There are biographies by G. E. Gleig, 1841, and by L. J. Trotter, 1878. See E. Gilliat, *Heroes of Modern India*, 1911; M. E. Monckton-Jones, *Warren Hastings in Bengal*, 1918;



WARREN HASTINGS

H. Doqwell, *Letters to Sir John Macpherson*, 1927; P. Moon, *Warren Hastings and British India*, 1948.

Hastings: 1. Watering place, parli., municipal, and co. bor. of Sussex, England, 33 m. E. of Brighton and 62 m. SSE. of London by rail. On the S. it is open to the Eng. Channel, but elsewhere is surrounded by high cliffs. The old tn. between the E. and W. hills, contains the fishing quarter and 2 pre-Reformation churches, one of which (All Saints) has a Doom painting over the chancel arch. A fine promenade runs for 3 m. along the sea front to St Leonards-on-Sea, which is within the bor. Apart from catering for visitors, fishing is the chief industry. There are sev. public gardens, the chief of which is the extensive Alexandra Park, and the tn. has 410 ac. of open spaces. H. derives its name from Haesten, the intrepid Dane who 1500 years ago founded the settlement which rose to eminence as a port during Saxon times and, in the reign of Athelstan, boasted not only a busy harbour but a Mint. It was a leading member of the 5 ports which in Edward the Confessor's time became the

Confederation of the Cinque Ports. The great castle founded by William the Conqueror, the ruins of which dominate the tn to-day, was the scene of many royal ceremonies. After John lost Normandy in 1204 H. declined rapidly. The harbour was gradually silted up by the 'eastward drift' of the sea—a process coincident with the building of bigger ships drawing more water. In its heyday H. contributed 21 ships fully manned to the Cinque Ports navy. By 1400 its contribution was only three. In 1588 H. managed to provide 1 vessel to help fight the Armada. As a reward the queen gave the tn its charter, and the bailiff of H. was given the title of mayor. Attempts to reconstruct the harbour, however, failed, and H. soon sank again into obscurity. In the 18th cent. it was a notorious centre for smuggling, but during the latter half of that century the tn's present reputation as a watering place was founded—a development more or less concurrent with that of Brighton. The H. of the 16th and 17th cents. was practically confined to what is to-day called the 'Old Town,' but during the last years of the 18th cent. and the early years of the 19th the tn extended rapidly along the shore to the W. In 1828 James Burton, aided by his son Decimus, the architects, founded St Leonards to the W. of the tn, soon, under royal patronage, to become a most fashionable resort. In the 'nineties, H. and St Leonards declined somewhat, but between the 2 world wars over £4,000,000 was spent in improvements to the attractions and amenities of the tn. During the Second World War H. was in the front line and suffered severely from enemy action, over two-thirds of its properties being damaged. Most have now been repaired, over 28,000 people rehoused, and H. has once again become a leading seaside resort. H. and St Leonards form the co. bor. of H., with a resident pop. of 65,000.

2. Bor. of New Zealand, North Is., in Hawkes Bay co., 11 m. SSW. of Napier. Its industries are of an agric. nature and there is a canning factory, the largest in New Zealand. Pop. 27,773.

3. City of Nebraska, U.S.A., in Adams co., 130 m. WSW. of Omaha. It has an altitude of 1932 ft. H. is a trade, railroad, and manufacturing centre for a grain and livestock region. It manufs. automobile parts, farm equipment, brooms, bricks, and air-conditioners; also produced are wheat, flour, and corn products. It is the seat of H. College. Pop. 20,211.

Hastings, Battle of, battle in which William of Normandy defeated the Eng. under Harold II, 14 Oct. 1066. The crucial stages took place on a hill, called Senlac by a later chronicler, about 6 m. from Hastings. Harold and his best fighting men were grouped round a standard at a point on the summit later marked by the high altar of Battle Abbey. The Eng. formations were packed closely together and their hope of victory lay in their being able to keep their close forma-

tion intact until the Norman attack had spent itself. This might have succeeded, but the Eng. discipline broke when the Normans were repulsed, and the Eng. who pursued them down the hill were then cut off and massacred by William's men. After this, the Normans made 2 feint withdrawals, each time succeeding in drawing out and destroying part of the Eng. army. Harold and the core of his force continued to fight, however, but at dusk Harold was killed, and after this, in spite of one isolated rally, Eng. resistance collapsed. See J. H. Round, *Battle of Hastings*, 1847.

Hastings Beds or Sands, part of the Lower Cretaceous series and a lower div. of the Wealden beds. They vary in thickness from 500 to 1000 ft. and consist mostly of sands separated by a persistent bed of clay 100 to 150 ft. thick near the middle. This is the Wadhurst Clay dividing the underlying Ashdown Sand from the overlying Tunbridge Wells Sand. They have been deposited in shallow fresh water, and fine specimens of ripple marks are often to be seen in the sand. The strata are highly fossiliferous and contain numerous saurian reptiles and the remains of sev. chelonians, besides the remarkable lepidotus and other fish belonging to the ganoid or placoid orders.

Haswell, par. of co. Durham, England, comprising the vils. of H. (pop. 2725) and South Hetton (pop. 3310), in Easington rural dist.

Hat (from O.E. *haet*, Ger. *Hut*), an easily removable covering for the head, consisting of a crown which covers the head itself, and a brim which can project at right angles to the crown or turn or roll upwards or slightly downwards. A head-covering which has no brim is not properly a H. Speaking generally H.s are only worn out of doors, but there are exceptions to this practice (see below). In primitive civilisations H.s seem to have been worn only as a protection against sun or rain, and were therefore confined to the working-classes or to travellers. Ceremonial headdresses were usually close-fitting and without brims, and could not, therefore, be classed as H.s. On Gk vases H.s are usually the distinguishing mark of shepherds or travellers—Paris, disguised as a shepherd, and Mercury, the god, as a traveller, wear H.s. Tanagra figures show Gk women sometimes wearing H.s over their more customary veils. Medieval art shows peasants working in the fields in H.s, usually made of straw.

The Renaissance, which replaced medieval feudalism by a more democratic system of urb. capitalism, changed the conception of dress (q.v.), and saw the introduction of H.s as general wear for men of all classes during the 14th cent. (they had been worn by both men and women for hunting before this time), but it was not until the second half of the 16th cent. that removable H.s began to replace the permanent arrangements of veils and headdresses that women had worn until that time.

Prehistoric Ancient Egypt - Assyria & Persia.*Greece Rome China.**Anglo-Saxon & Norman - 10th, 11th & 12th Century. 13th Century.*

In Italy in the middle of the 15th cent. men's H.s became very large, and more varied in design than they have been at any other period, some having enormous crowns with a brim, or even 2 brims turned up all round, others having very wide brims, either flat or turned up at the sides. At about this time H.s began to develop a national character, and those in Germany, England, France, and Italy varied from each other in style: none were so extreme as the H.s worn in Italy. From this period onwards men from different parts of the world have usually been distinguishable by their H.s, even though the differences between the H.s of one country and those of another have sometimes been very slight.

Men's H.s have usually been made either of plaited straw or of felt, often stiffened with some form of gum, but in the middle of the 19th cent. a H. known as a 'top hat,' which has a stiff foundation covered with silk plush, became extremely popular. Women's H.s were also made of straw or felt until the middle of the 19th cent., but since then they too have

often been composed of a stiffened frame over which another material, such as silk or velvet, is stretched. Some sports H.s both for men and for women are made of tweed, and others of stiffened linen or cotton. Since the middle of the 18th cent., speaking generally, women's H.s have been ornamented with ribbon, feathers, veils, etc., whereas men's have been trimmed only with a band of plain ribbon or a binding round the edge of the brim, but in the 16th and 17th cents. men's H.s were usually ornamented with ostrich feathers, and in the 18th cent. with gold lace or braid. The Puritans of the 17th cent., who disliked richness in dress, were recognisable by their plain felt H.s trimmed only with a ribbon fastened with a buckle.

Men's H.s (and, rarely, women's) have sometimes become 'frozen' in style, and have not advanced normally with the changing fashion. In this they have behaved like other parts of dress (q.v.). These static styles are often associated with some office or occupation. Lord mayors, for instance, usually wear an

1. Bronze Age Hat (Skin)
- 1A. Bronze Age Hat (Wool)
2. Egyptian Hat
3. Popular Egyptian
4. } Egyptian Skull Cap
- 4A. }
5. Assyrian Popular Hat
6. Persian Popular Hat
- 6A. Persian Noble's Hat
- 6B. Persian Popular Cap
7. Greek Traveller's Hat
- 7A. Greek Shepherd's Hat
8. Greek Working Man's Cap
9. Greek Lady's Hat
10. Roman Hat
- 10A. Roman Peasant's Hat
11. Chinese Peasant's Straw Hat
- 11A. Chinese Peasant's Hat
12. Chinese Skull Cap
13. Chinese Mandarin's Hat
14. Saxon Thegn's Cap
- 14A. Saxon Peasant's Cap
15. Anglo-Norman Hat 11th Cent.
16. Anglo-Norman Peasant Head-dress 11th Cent.
17. Countryman's Hat 12th Cent.
18. Merchant's Hat 12th Cent.
19. Huntsman's Hat 12th Cent.
20. Jew's Hat 12th Cent.
21. Countryman's Hat 13th Cent.
22. Peasant's Straw Hat 13th Cent.

23. Popular Hat 13th Cent.
- 23A. Skull Cap 13th Cent.
24. Peasant's Hat 14th Cent.
- 24A. Countrywoman's Hat 14th Cent.
- 24B. Countryman's Hat 14th Cent.
25. Merchant's Hat 14th Cent.
26. Nobleman's Hunting Hat 14th Cent.
27. Gentleman's Hat 15th Cent.
28. Gentleman's Hat 15th Cent.
29. Popular Hat 15th Cent.
30. Page's Cap 15th Cent.
31. Merchant's Hat 15th Cent.
32. Working Man's Hat 15th Cent.
33. Youth's Cap 15th Cent.
34. Gentleman's Hat Early 16th Cent.
35. Lady's Hat Early 16th Cent.
36. Popular Hat Tudor Period
37. Elizabethan Gentleman's Hat
38. Elizabethan Lady's Hat
39. Apprentice's Hat 16th Cent.
40. Countrywoman's Hat Late 16th Cent.
41. Gentleman's Hat Early 17th Cent.
42. Lady's Hat 17th Cent.
43. Cavalier Hat Mid-17th Cent.

44. Puritan Hat Mid-17th Cent.
45. Gentleman's Hat Late 17th Cent.
46. Townsman's Hat Late 17th Cent.
47. Cocked Hat 1720
48. Lady's Cap Early 18th Cent.
49. Cocked Hat 1740
50. Lady's Hat 1740
51. Cocked Hat 1760
52. Lady's Hat 1760
53. Lady's Hat 1780
54. Gentleman's Hat 1780
55. Gentleman's Hat 1790
56. Lady's Riding Hat 1790
57. Gentleman's Beavers 1820
58. Lady's Bonnet 1807
59. 'Tall' Hat 1840
60. Gentleman's Cap 1830
61. 'Stove Pipe' Tall Hat 1856
62. Lady's Bonnet 1834
63. Gentleman's Hat 1859
64. Popular Tall Hat 1860
65. Lady's Hat 1860
66. Bowler Hat 1881
67. Lady's Hat 1885
68. Coster Girl's Hat 1892
69. Straw Boater 1895
70. 'Trilby' Hat 1898
71. Woman's Hat 1910
72. Bowler Hat 1920
73. 'Trainer' Hat 1920
74. Man's 'Topper' 1925
75. Woman's 'Cloche' Hat 1926
76. Man's Silk Hat 1930
77. Woman's Hat 1935
78. Man's 'Anthony Eden' Type 1940
79. Woman's Hat 1945
80. Woman's Hat 1958

18th-cent. type of H. as part of their official dress; beefeaters wear an early 17th-cent. H.; Eng. court dress includes a type of H. that was fashionable in the early 18th cent. which has a brim sharply turned at each side of the crown, so that 2 points are formed, back and front—the 'bi-cocket,' or 'cocked hat.' The 19th cent. saw a slowing down in fashion changes in men's H.s, and since then certain types of H. have become associated with certain occasions: a grey top H. is worn at fashionable race-meetings, a black silk top H. at weddings and funerals, a 'bowler hat' by young men of fashion in England, a black soft felt 'trilby' or 'homburg' H. by most business men and diplomats in most countries. In England this type of H. has come to be called an 'Anthony Eden.' Women's H.s, which have remained much more varied in design, do not obey the same rules.

Certain H.s have acquired great significance: a H. called a 'knight's chapeau' or 'abacot' was in certain cases used as part of the crest on a coat-of-arms; cardinals' scarlet H.s, which are bestowed on them by the Pope, are of great importance as symbolising their office. Catholic bishops have a ceremonial H., and a low-crowned broad-brimmed black felt or silk plush H., the characteristic wear of Rom. Catholic priests, is also worn by some Anglican clergymen. During the 19th cent., when tall-crowned top H.s had become the usual wear for all gentlemen, a top H. made of a covering of silk mounted on a spring frame that could be flattened until the H. could be carried as a flat disk under the arm was called after its inventor a 'Gibus,' or 'opera hat,' and was worn with evening dress clothes.

Some H.s are associated with certain practices: the king used to remain covered while the men of his entourage were uncovered; men of the W. civilisations always remove their H.s in church or chapel, and when entering houses or public buildings, and raise their H.s as a salutation; Jews remain covered in the synagogue. Women's H.s, being more difficult to remove without disarranging the hair, are treated more like head-dresses, and are usually kept on on ceremonial occasions, even when these take place indoors. It seems that there is a fundamental difference between the H.s of men and those of women—men's have always been easily removable, and have tended to have a ceremonial significance; women's have always been a covering for the hair, are worn in church, and are not easily removable.

Since the beginning of the Second World War the custom of going out-of-doors without a H. has grown up among both men and women and shows no signs of dying out. Until this time people walking hatless in the streets of a tn would, at all periods, have been conspicuous, though an association of men, mockingly referred to as the 'Hatless Brigade,' had attempted since the end of the 19th cent., but with little success,

to spread the habit of leaving the head uncovered for reasons of health.

Hat-hor, early Egyptian sky-god, originally closely associated with Horus (q.v.), as her name 'House of Horus' shows. She is closely parallel to the Mesopotamian Ishtar, being the goddess of love as well as of desert cemeteries. She had 7 forms: originally represented with a woman's face and cow's horns and ears, later as a woman with 2 horn-like locks, sometimes as a cow. Latterly, wearing headress of horns and disk, she was indistinguishable from Isis.

Hat-trick, in cricket, the name given to the feat performed by a bowler who takes 3 wickets with 3 successive balls, not necessarily in the same over. The original expression 'to get a (white) hat' derived from the custom of giving a hat to the successful bowler. In the early 19th cent. the hat was normally a white beaver.

Hatay, Turkish name for the Sanjak of Alexandretta (q.v.).

Hatfield, tn of Yorks, England, on the Don, about 7 m. N.E. of Doncaster. With the opening of coal-mines the tn has become a prosperous colliery centre. Pop. 7500. Hatfield Chase, the dist. around the tn, was once a forest and hunting ground of kings. This forest lay between the rvs. Don, Idle, and Thorne. A great part of it was marsh, and in 1626 it was drained by Dutch engineers under Cornelius Vermuyden (q.v.).

Hatfield, or **Bishop's Hatfield**, tn and rural dist. of Herts, England, on the Lea, 17½ m. from London by rail and 6½ m. WSW. of Hertford. Apart from Hatfield House (q.v.), there is a complete wing of the Old Palace, once the residence of the bishops of Ely. Pop. 14,000.

Hatfield Forest, in Essex, England, 3 m. E. of Bishop's Stortford (Herts), with 1049 ac. of rolling country and some pine trees. It was part of the Royal Forest of Essex maintained from Tudor times till 1915. It includes an anct camp at Portinbury Hills, and a lake for boating and fishing. The forest is now vested in the National Trust.

Hatfield House, Herts, residence of the marquess of Salisbury and one of the finest Jacobean houses in England. Stands in a park some 10 m. in circumference. It consists of a central block, and 2 wings projecting southwards from its E. and W. ends. The Old Palace, built about 1496 by Cardinal Morton, Henry VII's prin. minister, stands in the garden. The Banquet Hall wing of the original building contains the visitors' restaurant. The palace passed eventually to the Crown and Queen Elizabeth I spent much of her childhood there. In James I's reign H. H. was given to Robert Cecil, 1st earl of Salisbury, in exchange for Theobalds. Three wings of the palace were then pulled down and the materials used for the foundations of the house which was built between 1607 and 1611, with Robert Lyninge as architect. The features of the house are the lofty marble hall, which contains the original panelling,

a finely-carved musicians' gallery, and a number of portraits, including 2 of Queen Elizabeth. There is a third portrait (by Zuccaro) of the queen, at the foot of the grand staircase, with its gracefully carved newel posts topped with cherubs and heraldic animals. Near the head of these stairs hangs one of the very earliest Eng. sporting paintings—the picture of Queen Elizabeth's white horse and its groom dated 1594. In the long gallery, which runs above the marble dining hall, is a carved oak cupboard containing Elizabeth's genealogical tree, tracing her ancestry back to Adam. In James I's drawing-room, so called from the statue of him above the fireplace, are family portraits by Romney, Reynolds, and others, and a fine Wilkie portrait of the duke of Wellington. All along the S. side of the first-floor runs the panelled Long Gallery; and from the windows is a fine view of the E. garden and maze.

Hathaway, Anne, *see* SHAKESPEARE, WILLIAM.

Hathersage, vil. of Derbyshire, England, 12 m. from Sheffield. Around the vil. is some of the finest of the Derbyshire scenery. Little John, henchman of Robin Hood, is traditionally supposed to have been buried in the churchyard. Some 3 m. S. of H. is Froggatt Wood, purchased in 1939 by the Sheffield and Peak Dist. Branch of the Council for the Preservation of Rural England.

Hatria, *see* ADRIA.

Hats and Caps, name given to 2 political factions in Sweden, which existed for a period of about 35 years, from 1738 until their abolition in 1772. Their constant feuds were partly symptomatic of, and partly responsible for, the anarchical state of the country during this period.

Hathesput, queen of the 18th Egyptian dynasty, daughter of Thothmes I. She succeeded Thothmes II, marrying the latter's illegitimate son, Thothmes III, and reigning energetically from 1505 to 1483 B.C. H. undertook many peaceful projects, including the famous expedition to Punt, recorded in her funerary temple at Deir el Bahri, Thebes.

Hatsilai, *see* NIKKO.

Hatteras, Cape, in North Carolina, U.S.A., at the end of a long sandbank or is. separated by Pamlico Sound from the mainland. Violent storms often occur, producing a heavy sea, which makes the inlet dangerous to navigators. It has been marked by lighthouses since 1798.

Hatteria Punctata, *see* SPHENODON PUNCTATUS.

Hattiesburg, cap. of Forrest co., Mississippi, U.S.A. It has foundries, cottonseed oil mills, machine works, etc. Pop. 29,500.

Hatto I (fl. 891–913), archbishop of Mainz, came of a Swabian family, and obtained his archbishopric under King Arnulf in 891. He was so popular with this monarch that he received the nickname of 'the heart of the king.' On the death of Arnulf, in 899, H. was appointed regent of Germany and guardian of the young king Louis. He is said to have

exercised his power in a very arbitrary manner, and to have been guilty of many serious crimes.

Hatto II, archbishop of Mainz from 988 to 970; he is said to have unjustly oppressed the poor, and his name is associated with the legend of the Mouse Tower at Bingen, where he is reported to have been devoured by mice.

Hatton, Sir Christopher (1540–91), Eng. courtier and lord chancellor, b. Holdenby. He became the favourite of Queen Elizabeth I through whose influence he was made lord chancellor in 1587—a remarkable appointment in view of the fact that he was not a professional lawyer. He was educ. at St Mary's Hall,



SIR CHRISTOPHER HATTON

Oxford, and kept terms at the Inner Temple. H. is said to have first attracted the queen's attention by his dancing at a masque, and appears to have been extremely handsome and well-versed in social accomplishments. He seems, however, to have had sufficient natural capacity to acquit himself without disaster on the Woolpack; he acted throughout as the queen's mouthpiece, though his sympathies seem to have been with the extreme Protestant faction at court. His death was the result, according to tradition, of 'a broken heart' through the queen's demanding payment of a debt which he was unable to meet. *See* life by E. St J. Brooks, 1946.

Hatton, John Liptrott (1809–86), composer, b. Liverpool. After holding appointments as organist in Liverpool, he came to London in 1832; 10 years later he was appointed conductor of Drury Lane Theatre, where his own operetta, *Queen of the Thames*, was produced. Some years later he was the accompanist of the St James's Hall Ballad Concerts. He also composed many songs, including *Good-night Beloved*, *Simon the Cellarer*, and *To Anthea*.

Hattusa (modern Boghaz Keul), cap. of Hittite empire, see HITTITES.

Hatvan, tn of Hungary, in Heves co., on the R. Zagyva, 33 m. SW. of Eger (q.v.). It has a splendid manor house (now a school), and sugar and canning industries. Pop. 16,104.

Hauberik, see ARMOUR.

Haubourdin, Fr. tn in the dept of Nord, on the Deûle, 4 m. SW. of Lille. It has textile, soap, and leather manufs. Pop. 10,006.

Hauch, Johannes Carsten (1790-1872), Dan. poet and dramatist, b. Frederikshald, Norway, of Dan. parents. In 1846 he became prof. of Scandinavian languages at Kiel, in 1848 returned to Copenhagen, and from 1858 to 1860 was director of the Dan. National Theatre. H. was greatly influenced by Oehlenschläger and he became one of the most important exponents of Dan. romanticism. His works include collections of *Poems*, 1842, and of *Lyrical Poems and Romances*, 1861, *Valdemar Sejr*, 1862, an historical epic, and some very fine tragedies produced between 1841 and 1866, including *Svend Grathe*, 1841, *The Sisters at Kinnekulle*, *Marshal Stig*, 1850, *Honour Lost and Won*, *Tycho Brahe's Youth*, *The King's Favourite*, and *Henry of Navarre*. He is greatest in his lyric poetry, characterised by intensity of feeling, and a tendency towards the supernatural.

Hauff, Wilhelm (1802-27), Ger. author, b. Stuttgart. In 1826 he produced *Lichtenstein*, an historical novel in the tradition of Sir Walter Scott, which became very popular. His other works, all displaying a great gift for story telling, include: *Mittelungen aus den Memoiren des Salomo*, 1828, *Bettlerin von Pont des Arts*, 1836, *Phantasien im Bremer Ratskeller*, 1827, and some short poems. See *Ridemann, Hauff in Bremen*, 1929.

Haug, Martin (1827-76), Sanskritist. From 1859 to 1866 he was prof. of Sanskrit at Poona, and from 1868 onward prof. of Sanskrit and comparative philology at the univ. of Munich. He ed. sev. Sanskrit texts and pub. treatises on Brahma and the Brahmins. His pub. on Pāṇini mark a distinct epoch in the study of this language. His main works are: *Die fünf Gāthas* (2 vols.), 1858-60, and *Essays on the Sacred Language, Writings, and Religion of the Parsees*, 1862.

Haugesund, seaport in Rogaland co., Norway, 36 m. NW. of the tn of Stavanger. Its harbour is from 17 to 50 ft in depth. It has important fisheries and a large merchant fleet. Pop. 19,000.

Haughton, William (c. 1575-1605), Brit. dramatist. He collaborated in many plays with Henry Chettle and Thomas Dekker. Philip Henslowe mentions in his diary how he helped to release H. from 'the Clink' by a loan of 10s. H. was sole author of the popular comedy *Englishmen for my Money*, c. 1598, and possibly of *Grim the Collier of Croyden*, c. 1600, and is supposed to have written the greater part of *The Pleasant Comedie of Patient Grisell*, 1603.

Haukur Erlendsson (d. 1334), Icelandic

chieftain who also held offices in Norway, where he was knighted. He is best known for his compilation of sagas, named *Hauksbók* after him, and containing, *inter alia*, his own version of *Lándnámabók* (q.v.). A complete ed. of *Hauksbók* was pub. in Copenhagen in 1892.

Haulbowline, ls. opposite Cobh in Cork Harbour, Rep. of Ireland. H. has a dockyard and steel works, and is the Irish Navy H.Q.

HauMt-es-Suk, see JERBA.

Hauptmann, Carl (1858-1921), Ger. playwright and novelist, b. Obersalzbrunn, Silesia, the elder brother of Gerhard H. Unlike his brother, he remained independent of the naturalistic school. Among his best-known plays are *Die Bergschmiede*, 1902, *Die Austreibung*, 1905, *Moses*, 1906, *Napoleon Bonaparte*, 1911. He was also successful as a novelist: *Die Hütten am Hange* (short stories), 1902, *Mathilde*, 1902, *Einhart der Lächler*, 1907. H.'s work was somewhat overshadowed by that of his younger brother. See W. Goldstein, *Carl Hauptmann, eine Werkdeutung*, 1931.

Hauptmann, Gerhart (1862-1946), Ger. dramatist, novelist, and poet, b. Obersalzbrunn, Silesia, son of a hotel-keeper; he was educ. there and at the Realsschule in Breslau. He worked for a time on a farm at Jauer, and then returned to Breslau to study art, continuing his education at Jena Univ. In 1885 he made a rich marriage, and was able to embark on literary work in Berlin. His first notable play, *Vor Sonnenaufgang* ('Before Sunrise'), 1889, a pioneer of the movement towards naturalism, reproduced the harshness and debasement of Silesian peasant life; this was followed by his most famous play, *Die Weber* ('The Weavers'), 1892, which dealt with the rising of the Silesian weavers in 1844 and brought him world fame. His much-praised play, *Die versunkene Glocke*, 1896, is a poetic visionary dream not however devoid of external truth. *Hannele*, a drama on the fevered vision of a child, was produced in 1894, followed by realistic social and historical dramas, including *Fuhrmann Henschel*, 1898, and *Der rote Hahn*, 1901. He wrote but few comedies, among them being *Der Silberpelz*, 1893. He was awarded the Grillparzer Prize in 1898 and in 1905 was made an honorary Litt.D. of Oxford Univ. His later work is allegorical in treatment, with experiments in the supernatural bordering on the irrational. In 1911 he wrote a religious novel, *Der Narr in Christo, Emanuel Quint*, and a long solemn pretentious philosophical poem, *Till Eulenspiegel*, 1925. In 1912 he was awarded the Nobel Prize for literature and he received many honours in Germany; but his increasing submission to the Nazi regime adversely affected his subsequent work. Prolific and poetical, and consistently serious in all he wrote, H. as a dramatist is too abstrusely romantic and wanting in human warmth, and, though he was early influenced by the realism of Flaubert,

Zola, and Ibsen, the manifest trend of his outlook was speculative, visionary, and symbolical. See his autobiography *Das Abenteuer meiner Jugend*, 1937, and study by E. Sulger-Gebing, 1909; also E. Lemke, *G. Hauptmann*, 1923; and *Gerhart Hauptmann—Jahrbuch*, 1936 ss.

Hauraki, gulf of the Pacific in North Is., New Zealand, 70 m. long and 40 n. broad. It has sev. excellent harbours, the tn of Auckland being situated on that of Waitemata, and it also contains many well-wooded is. A good outer breakwater is formed by the Great Barrier Is.

Hauran (Heb. *chauran*, the hollow land, so called from its numerous caves), dist. in Syria, corresponding to the biblical Golan and Bashan, and comprising the mountainous plateau extending in the E. from the Jordan and the sea of Tiberias. It consists of mt ranges and large plains, with scattered eminences rising steeply from the valley of the Jordan to a height of about 2000 ft above the Mediterranean. It is full of the remains of anct cities and various monuments of the Gk and Rom. periods. The whole country is inhabited only by wandering Bedouins and a few colonies of Druses.

Hausa, West African people, inhabiting a dist. of about 50,000 sq. m. in the West and Central Sudan, from the R. Niger to Bornu and including N. Nigeria. The pop. is over 5,000,000 in Nigeria alone. They are a negro type, and have a strong admixture of Arab and Fulah blood. The skin is very black, but the lips less thick and the hair less woolly than in most negroes. Their language belongs to the Hamitic group, and a large proportion of the words are connected with Arab and Semitic roots, thus tending to verify the native tradition that the origin of the race was beyond Mecca to the E. The language, which has become a *lingua franca* over a wide area, has been reduced to writing, in modified Arabic characters, by the natives themselves, and there is a certain amount of native literature. The H. are a most industrious people. They are excellent agriculturists; have for long mined iron, tin, silver, lead, and salt; have developed numerous industries, including spinning, weaving, dyeing, and working in leather and glass; and large markets are a feature of H. economy. Kano, Zaria, Sokoto, and Katsina, all walled tns, are the chief centres. The staple food of the H. is guinea corn. The H. were conquered by the Fulani (see FULAHs) during and after the *jihad* (holy war) of 1804. The Fulani set up states with predominantly H. pops., of which the best-known are Sokoto (whose ruler was head of the entire empire), Kano, Zaria, and Katsina. The H. have an elaborate system of ranks, with titles held by the many state functionaries. The various state rulers are known to-day as emirs. The H. are loyal to their chiefs, inclined to despise the S. tribes, and have proved to be the best soldiers in West Africa. In some quarters it is feared that sooner or later their militant propensities and dislike of the southerners may lead to a

renewal of the invasion of S. Nigeria which was arrested when the Brit. took over the gov. of Nigeria (q.v.). See C. H. Robinson, *Hausaland*, 1896, and *Dictionary of the Hausa Language*, 1925; G. P. Barkery, *Hausa Dictionary*, 1935; C. K. Meek, *The Northern Tribes of Nigeria*, 1925; W. Miller, *Yesterday and Tomorrow in Northern Nigeria*, 1938; Lord Hailey, *An African Survey*, 1938, 1957; Sir A. C. Burns, *History of Nigeria*, 1943; M. F. Smith, *Baba of Karo: A Woman of the Muslim Hausa*, 1954; *Nigeria Year Book*.

Haushofer, Karl (1869–1946), founder of Ger. geopolitics (q.v.), b. Munich. He travelled in SE. Asia between 1887 and 1919 and became prof. at Munich in 1921. His theories had much influence on the world-domination policies of the Nazis.

Hausman, Georges Eugène, Baron (1809–91), builder of modern Paris, b. Paris. He was educ. at Collège Henri IV, and studied for the law. In 1830 he became *sous-préfet* of Nérac; from 1849 to 1851 was successively prefect of Var, Yvonne, and Gironde, and in 1853 was made prefect of the Seine by Louis Napoleon, who had vast schemes for the embellishment of Paris. The improvements carried out by H. transformed Paris; but their cost, which amounted to £34,000,000, led to considerable opposition, and in 1870 he was forced to resign by the gov. of Emile Ollivier. In 1877 he became Bonapartist deputy for Ajaccio. See his *Mémoires*, 1890–3; see also J. M. and B. Chapman, *Life and Times of Baron Haussman*, 1957.

Haut-Rhin, see RHIN, HAUT-
Hautboy (Fr. *hautbois*), see OBOE.
Haute-Garonne, see GARONNE, HAUTE-
Haute-Loire, see LOIRE, HAUTE-
Haute-Marne, see MARNE, HAUTE-
Haute-Saône, see SAÔNE, HAUTE-
Haute-Savoie, see SAVOIE, HAUTE-
Haute-Vienne, see VIENNE, HAUTE-
Haute-Loque, Vicomte de, see LECLERC.
Hautefort, Viscount of, see BERTRAN DE BORN.

Hautes-Alpes, see ALPES, HAUTES-
Hautes-Pyrénées, see PYRÉNÉES.
HAUTES-

Hautmont, Fr. tn in the dept of Nord, on the Sambre. It has steel and zinc works, and chemical manufs. Pop. 14,100.

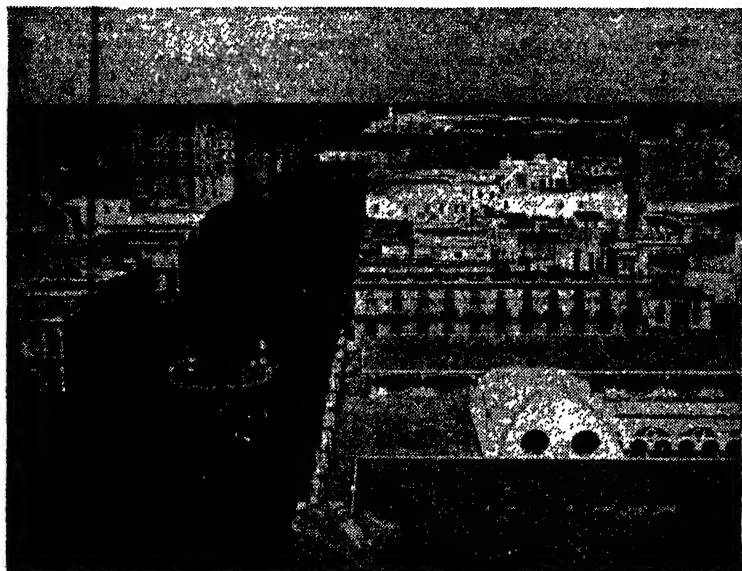
Haüy, Abbé René Just (1742–1822), Fr. physicist and mineralogist, b. St Just, Oise. In 1781 he discovered the geometrical law of crystallisation associated with his name, which he afterwards expounded in his *Traité de minéralogie*, 1801. For this he was elected to the Academy of Sciences in 1783. In 1802 he became prof. of mineralogy at the Museum of Natural Hist., Paris. His works include *Traité élémentaire de physique*, 1803, and *Traité de cristallographie*, 1822. See life by G. Cuvier, 1823.

Haüy, Valentin, see BLIND, *Institutions for the blind*.

Haüynite, or **Haüyne**, rock-forming mineral, named in honour of the Fr. mineralogist, Haüy (q.v.), consisting of

silicates of aluminium and sodium, or aluminium and calcium, together with sodium and calcium sulphates. It is a vitreous, translucent substance, having a conchoidal fracture, a hardness of 5 to 5.5 and sp. gr. 2.2 to 2.5. It occurs in sky-blue, green, or yellow cubes, crystallising in dodecahedra. The crystals often contain symmetrically arranged inclusions of other minerals, so that the precise composition of H. is not yet certain. Frank Rutley thought that H. and nosean (q.v.)

is 210 nautical m. SW. of Florida. It occupies a peninsula, forming the entrance of a magnificent land-locked harbour (towards the W. end of the N. coast of the is.) averaging about 280 yds in width and about 1400 yds in length. This permits large vessels of all descriptions to come within the shelter of the harbour, which is divided into 3 distinct arms or bays, called Regla Bay, Guanabacoa Bay, and the Bay of Atarés. The approach to H. from the sea is impressive, and beyond



HAVANA: THE PRADO AND MORRO CASTLE

F.N.A.

were mere varieties of the same species and X-ray examination has revealed its essential identity with nosean, sodalite, and the artificial ultramarines. Lapis lazuli is a member of the same group. On heating in the blow-pipe H. melts to a glass, whilst nosean only melts at the edges; both, however, are gelatinised with acids. It is found in Mt Somma, Puy de Dôme, Mt Vesuvius, the Laacher See near Koblenz, and elsewhere. It has occasionally been cut as a gem-stone.

Havana (La Habana), cap. of the is. of Cuba (q.v.), and one of the most important seaport tns. It was named by its founder (1519), the Adelantado Don Diego Velázquez, 'Llave del Nuevo Mundo' ('the New World's Key'), on account of its important position. By the Spaniards it was named San Cristóbal de la Habana. H. is the largest and most important city in the West Indies. It

the surf-beaten coast the first conspicuous objects to strike the eye are the historic Morro Castle, whose venerable fortifications command the narrow bottle-necked entrance to the harbour, and the tall lighthouse, erected 1844 by Governor-General O'Donnell. The Morro ('promontory'), erected on the E. side of the harbour between 1589-97, is partly hewn out of the rock and partly constructed of solid blocks of rock, this giving it an irregular appearance. Its moat, 70 ft deep, is crossed by a drawbridge. On the W. is La Punta, another fort. Round the seaward side of the city is the fine driveway on a sea-wall, called the Malecón, with its gardens and handsome bandstand. Beyond the Morro on the left are the heights forming an amphitheatre S. and W. of the city, some of the hills being 1000 ft high and crowned with fortifications known as the Cabañas, built in

1763-74. The fortress 'Castillo del Principe' is entered by a massive gateway approached by a drawbridge. It was in this harbour that the Amer. cruiser *Maine* was blown up on 15 Feb. 1898, when 270 men and 2 officers were killed, this being the immediate cause of the Sp.-Amer. war. In 1912 the *Maine* was raised, towed out to sea and sunk. Many improvements have been effected in H. since the U.S.A. military occupation, notably in the way of wider thoroughfares, better built houses, and general sanitation. Yellow fever, a very prevalent epidemic, was found to be caused through the sting of a mosquito (*Stegomyia*), and precautions were taken to remove the cause of offence.

The chief trade of H. is the tobacco industry, and there are numerous cigar factories. Sugar is also one of the prin. products. There is an extensive export trade in sugar, tobacco, cigars, grape fruit, and other products. Trade is chiefly with the U.S.A., Great Britain, and France. There are sev. important public buildings, such as the Palace, the Exchange (El Mueble), and the custom-house. The handsome railway station of the United Railways of Havana is near the S. of the city where once stood the arsenal. A series of parks and avenues crosses H. from S. to N., following closely the direction of the old walls. From Parque Fraternidad the Prado, or Paseo de Martí, a boulevard of laurel trees, extends to the Malecón, which forms the prin. traffic road. Facing Central Park are the handsome Capitol, crowned by a white dome, and the National Theatre, which can seat an audience of 3000. Obispo (Bishop) and O'Reilly Streets, narrow and highly picturesque, and the chief shopping centres, run parallel to the old Presidential Palace in the Plaza de Armas. O'Reilly Street was named after the general who entered the city by it while the Eng. left by Obispo Street when the city was given back to Spain at the end of the Seven Years War. To the N. of the Plaza de Armas is La Fuerza, reputed to be the oldest fortress in the New World, and erected by Hernando de Soto in 1519. On its tower is the Habana, a figure emblematic of the city. On the W. side of the Plaza is the Cabildo (q.v.) or Ayuntamiento, the City Hall, in Sp. times the residence of the captain-general. At the NW. corner of the Plaza is the Supreme Court of Justice, once the residence of the archbishop and, later, the Senate House. The cathedral, dedicated to the Virgin of the Immaculate Conception, is near the junction of Empedrado and San Ignacio Streets. It was built in 1704 by the Jesuits, with twin towers and massive walls. H. has a National Library and opera house, schools of arts and trades, a fine univ., and sev. secondary schools, etc. It is the terminus of the air-mail and passenger planes from the U.S.A. and a station for the air connection SE. to Haiti, Central America, etc. It is the terminus of the chief railways of the is. and has an excellent steamship service

with the leading Amer. and European ports. Its winter tourist trade is important, H. being only 1 hr by air from Florida, and 5 from New York. Pop. 783,160. The prov. of H. has a pop. of 1,541,000.

Havana, Declaration of, made by the Pan-Amer. Conference, 30 July 1940, vetoing the transfer of the colonial dependencies of non-Amer. countries in the W. hemisphere to other non-Amer. countries. The aim of the declaration was to prevent the seizure of Fr., Dutch, or other European colonies by Germany or Italy. The Conference arranged that if any transfer were attempted the possessions might be jointly administered by the Amer. reps., at least two-thirds of the reps. participating, until such time as their definitive gov. should be decided by the free determination of their people. Any sudden attempt at seizure would be met by the U.S.A. acting in the defence of the continent of America.

Havant, tn of Hants, England, near the head of Langstone Harbour. Pop., with Waterlooville, Emsworth, and Hayling Is., 36,000. Hayling is a seaside resort; the remainder of H. dist. is mainly residential.

Havel, riv. of Germany which rises in a small lake 8 m. NW. of Neustrelitz (q.v.), and flows S. to Berlin, and then W. and NNW. past Potsdam and Rathenow to join the Elbe 18 m. SE. of Wittenberge (q.v.). At Berlin it meets the Spree, by means of which it is linked to the Oder (q.v.). Length 215 m.

Havelock, Sir Henry (1795-1857), Eng. soldier, entered the army in 1815, and went to India with the 13th foot 8 years later. He served in the Burmese war (1824-6), and was aide-de-camp to Sir Willoughby Cotton in the Afghan war of 1839. During the next years he rose steadily in his profession, and saw much active service. In the Indian Mutiny, during the last year of his life, he won world-wide renown. He captured Cawnpore in July, and was promoted major-general; and in the next few months effected the relief of Lucknow. A few days later he d. He had in Sept. been made K.C.B., and, before his death was known in Great Britain, was created a baronet and granted a pension. See lives by J. C. Marshman, 1860, L. Cooper, 1957.

Haverfordwest, municipal bor., co. of itself, and co. tn of Pembrokeshire, South Wales, on the W. Cleddau R., 6 m. NE. of Milford Haven, centre of a busy agric. marketing area. The tn was settled by the Flemings in the reign of Henry I. The parochial grammar school was founded in 1488; the grammar school in 1613. There is a civil airport (2 m.). Pop. 7600.

Haverhill: 1. Mkrt tn in Suffolk, England, on the borders of Essex and Cambs, 18½ m. SE. of Cambridge on the Rom. road known as the Via Devana. Few relics of antiquity are left in the tn, as it was largely destroyed in a disastrous fire in 1665 in which the fine 14th-15th-cent. par. church was much damaged; it has since been completely restored and

enlarged. The manor house, now the vicarage, is of 17th-cent. date and contains some fine panelling. To the SE. are some scanty remains of an earthwork known as Haverhill Castle. Two m. to S. is Kedington with its church noted for its wonderful collection of tombs and fittings dating from the 13th to the 19th cents. There are manufs. of ready-made clothing (dating from 1784), heavy hand-made gloves, hair canvas for stiffening coats and fibre mats. Other industries are the manuf. of agric. implements and brushes, and there are also a rope works and a large flour mill. Pop. 4150.

3. City in Essex co., Massachusetts, on l. b. of the R. Merrimac, 33 m. N. of Boston. It is connected with Bradford by a bridge. H. is the bp. of the poet Whittier, who was educ. at the academy in the tn. The prin. industries are the manuf. of boots and shoes, machinery, paper, boxes, woollens, and electrical equipment. It is the seat of Bradford Junior College. Pop. 47,820.

Havildar (Hindu *haveladar*), non-commissioned officer in the Indian Army. The rank corresponds to that of a sergeant in a Brit. regiment.

Havlíček-Borovský, Karel (1821-56), Czech writer. He considered himself above all a journalist, though he was a considerable critic and poet as well. He worked for many years for 3 well-known Czech newspapers, putting forward his liberal and patriotic programme, though he condemned the romantic, sentimental patriotism of the time. As a poet his favourite form was the epigram. His later years were spent in imprisonment and exile (following official disapproval of his liberal views) in the Tirol, where he wrote his famous 'Tirolese elegies.'

Havlíčkův Brod (formerly *Nemecký Brod*; Ger. *Deutschbrod*), Czechoslovak tn in the region of Jihlava (q.v.), on the Sazava. It was the scene of a victory of the Hussites (q.v.) in 1422. Textiles are manufactured. Pop. 11,800.

Havre, Le, Fr. seaport in the dept of Seine-Inférieure, on the N. side of the estuary of the Seine, 55 m. from Rouen and 143 m. from Paris. It is the 3rd port of France and is used by transatlantic liners, and there is trade with all the chief European ports, with Africa, America, and the West Indies. The tn and harbour were very badly damaged during the Second World War, but there has been considerable reconstruction and the port is regaining its old prosperity. It was founded in 1517 by François I, and supplanted Harfleur (q.v.), which was at that time a port of great importance. In 1562 Louis I, prince of Condé, the commander of the Huguenot army, delivered the tn to the custody of Queen Elizabeth of England, but the Eng. were expelled by Charles IX and Catherine de' Medici in 1563. The fortifications of the tn were improved by Richelieu, and, later, by Vauban (q.v.). The port has 2 outer harbours (one of them new), an inner harbour, a tidal basin which can accommodate the largest ships in the world, 11

wet-docks, and a dry-dock. Barges from Paris can approach the port by means of the Tancarville canal without having to attempt the estuary of the Seine. It is the prin. import centre for cotton, coffee, sugar, and wool. There are engineering works and shipbuilding yards, and textile, chemical, and foodstuff manufs. H. has also a bathing-beach, and a casino, and beside it is the seaside resort of Ste-Adresse, called 'the Nice of Le Havre.' During the fighting in Normandy in 1944, H. was for a time the main base of the Ger. light coastal craft, such as 'E' and 'R' boats, attacking allied cross-Channel shipping. The Ger. garrison in H. was isolated after the Allies crossed the Seine in Aug. 1944, and surrendered only after a stubborn resistance. Pop. 130,000.

Havre de Grace, city in Hartford co., Maryland, U.S.A., on Chesapeake Bay at the mouth of Susquehanna R., 33 m. NE. of Baltimore. Through it passes the Wilmington and Baltimore railroad, which crosses the Susquehanna by a steam ferry. It is the trade centre for an agric. area, and has canneries and commercial fisheries. Pop. 7810.

'**Haw Haw, Lord**,' see JOYCE, WILLIAM.

Hawaiian Islands, or **Hawaii**, formerly the **Sandwich Islands**, form a ter. of the U.S.A. They consist of a chain of 20 is. in the N. Pacific Ocean between 18° 55'-22° 16' N. lat. and 154° 4'-160° 30' W. long., some 9 of which are inhabited. The inhabited is. extend for about 380 m. from ESE. to WNW., whilst the uninhabited ones continue the chain for many hundreds of m. WNW. All the is. are of volcanic origin, and nearly all of them are surrounded by coral-reefs. The names of the inhabited is. are Hawaii, Maui, with 2 smaller is., Kahoolawe and Lanai, Molokai, Oahu, Kauai, and Niihau. Hawaii Is. is in the shape of an irregular triangle, the sides of which measure 90 m., 75 m., and 65 m. This is. is the chief of the group, and it possesses the largest volcano in the world, the Mauna Loa (Great Mt.). This mt has been the scene of many terrible eruptions, the last of which, in 1907, was attended by an earthquake. The mt has a huge crater, called Mokuaweo, and is 13,675 ft high. The mt of Kilauea erupted in 1924 and earthquakes have been numerous. A volcanic observatory is situated at Kilauea. Maui lies 26 m. distant from Hawaii, and consists of 2 mts connected by the isthmus Wailuku, about 8 m. long and 6 m. wide. The 2 small is. Kahoolawe and Lanai afford pasture for sheep, and are private property. The is. of Molokai has a famous leper settlement called Kalanpapa, which is a peninsula, shut off from the rest of the is. by a rock wall, 2000 ft high. The is. of Oahu is surrounded by a coral reef, and lies 23 m. from Molokai. It is very mountainous, with remarkably beautiful valleys and tropical vegetation. There are sev. craters on the lower mts near the coast. The cap. Honolulu is situated on this is. The Federal Gov. of the U.S.A., to facilitate the protection of the Pacific

coast and the control of the Panama Canal, constructed extensive naval works at Pearl Harbor, about 7 m. from Honolulu, and also military works at Honolulu and other places on the is. The dry dock at Pearl Harbor naval station was opened in Aug. 1919. Kauai is 63 m. from Oahu, and has been called the 'garden isle' on account of its fertile ground. Niihau completes the chain of inhabited is., and is remarkable for its coral reef in the W. and for the large salt lagoons in the S. For administrative purposes the Ter. of H. consists of 4 cos. The is. of Oahu is known as the city and co. of Honolulu. The remaining cos. are Hawaii (including the is. of that name), Maui (including the is. of Maui), and Kauai. The Molokai leper colony, where Damien (q.v.) worked between 1873-89, is controlled by the Board of Hospitals and Settlements. The Amer. President appoints the Governor; there is a Senate of 15 and House of Representatives of 30 members; and the Ter. sends a delegate to Congress at Washington.

The natives of Hawaii were cannibals in earliest times, but they became more civilised with the influx of other races, and they owe their Christian religion and general education to missionaries (see DAMIEN, FATHER), the first to arrive coming from America in 1820. The pop. is very varied, consisting of Europeans, Chinese, American, and Japanese. The climate is most salubrious, and the cultivation of the sugar-cane forms the chief trade. The is. are very fertile and, besides the sugar-cane, rice, pineapples, bananas, cotton, sisal, coffee, and other tropical and subtropical products are largely grown. Valuable timber is procured from the vast forests. Sev. lines of steamers and airlines connect the is. with America, Australia, China, and Japan, and there is an inter-is. steamship and aeroplane service. There are telephones and wireless telegraphy, and Honolulu is lighted by electricity. Hawaii has a supreme court and circuit courts, and elementary education is compulsory and free. There is a normal school and a H. univ. (founded in 1907). Pop. of the is. by the census of 1950 was 499,794.

History.—Capt. Cook discovered the H. I. in 1778 and named the group Sandwich Is. after the 4th earl of Sandwich, then First Lord of the Admiralty; but in 1779 lost his life in an unimportant encounter at Kealahou Bay. Later some Brit. and other European sailors settled there, including 2 men, John Young and Isaac Davis, who became influential advisers to King Kamehameha I, called the Great, founder of the Hawaiian State and monarchy. The Hawaiians looked to Britain as their disinterested protector, as is shown by their flag devised early in the last century and consisting of narrow bands of red, white, and blue with the Union Jack in the upper canton. Kamehameha d. in 1819 and his successor, Kamehameha II, disturbed over the changes through the growing intrusions of white men, resolved to visit England for

advice, and with his queen, Kamamalu, and Polynesian retinue landed in England in 1824; but the royal pair both succumbed to measles in London before their meeting with George IV, who, however, promised their followers that he would watch over their country. The Brit. Gov. then appointed Capt. Richard Charlton of the mercantile marine to be its first Consular Agent for 'the Sandwich, Friendly, and Society Islands' to reside at Honolulu. Charlton, after some years there, marked by sev. disputes, was succeeded in 1843 by Gen. Wm Miller, with consular jurisdiction in all the Pacific Is. This change was due to a dispute between Charlton and Kamehameha III's Amer. adviser, Dr Judd, over an acting consular appointment made by Charlton. The Brit. colony, apprehensive at the attitude of the Hawaiian Gov., protested to Adm. Thomas, Brit. naval commander-in-chief, who sent Capt. Lord George Paulet to Honolulu in H.M.S. *Carysfort* to investigate the position. Paulet was soon involved in a dispute with Judd, who advised the king, pending the return from England of an Hawaiian envoy who had gone there to lay his case before the Brit. Gov., to cede the is. provisionally to Queen Victoria, feeling confident that the Brit. Gov. would reject the offer. Judd was right in his expectation, Adm. Thomas reporting that the decision of Lord Aberdeen, Brit. foreign secretary, was to the effect that he did not think it politic or advantageous for Great Britain to establish a paramount influence in the is. as against other powers; and such remained the state of affairs until the reigning dynasty ended with the death of Kamehameha V in 1873. Meanwhile, in 1862, an Anglican bishop arrived in H. despite the opposition of the Amer. missionaries, and, in 1865, Emma, widow of Kamehameha IV, and a granddaughter of John Young and his native wife, visited England as the guest of Queen Victoria. But notwithstanding these bonds with England, commercial and agric. developments in H., combined with the enhanced local position won by the Amer. missionaries through land ownership and business interests, resulted in the U.S.A. acquiring the paramount influence in the is. In 1874 Kalakaua was elected king as the candidate in favour of Amer. annexation against the dowager-queen, Emma, who was supported by the majority of Hawaiians. Great Britain opposed Amer. annexation, but James G. Blaine (q.v.), Amer. secretary of state, informed the Brit. Gov. in 1881 that sooner or later H. would have to come under Amer. protection; that time did not arrive until the Sp.-Amer. war, when America sought a stronghold and supply depot in the Pacific. H., which had been an independent native kingdom till 1893 and a rep. from 1894 to 1898, was formally annexed in 1898 and became a Ter. in 1900. A plebiscite held in the is. in 1940 on the issue whether the Ter. should apply for statehood resulted in a majority of two to one in

favour of statehood, which, if accepted, would have made H. the 49th state of the U.S.A. But in Dec. 1941 the Japanese launched their sudden and treacherous attack by plane and submarine on Pearl Harbor and H. thus became a pawn in the world conflict (see PEARL HARBOR). By the summer of 1942 the Japanese had completed preparations for an attempt to capture Midway Is. as a stepping stone to an assault on H., but the decisive Amer. air-naval victory off Midway Is. (3-6 June 1942) averted the danger for the rest of the war.

The pop. of the Ter. of H. is 499,794 (Honolulu co. and city 347,530; Hawaii co. 67,680; Maui co. 55,900; Kauai co. 29,838). In 1940 some 80,000 of the pop. were aliens. The land area in the is. is 6420 sq. m. Prin. cities: Honolulu on the is. of Oahu, with a pop. in 1950, of 248,034; Hilo (on Hawaii) 27,200.

See A. P. Sharpe, *Spotlight on Hawaii*, 1944; J. C. Furnas, *Anatomy of Paradise*, 1950.

Hawarden, vil., rural dist., and par. of Flintshire, North Wales, 7 m. W. of Chester. H. appears in Domesday Book as *Haordine*; here is St Deiniol's church, probably dating from 1275 but restored in 1857 after a fire. St Deiniol's library and hostel for theological students was founded here in 1895 by Gladstone, whose home, H. Castle, built in 1752, is still in the Gladstone family. Industries include steel and aircraft manuf. Pop. (of rural dist.) 38,000.

Hawes, Stephen (c. 1475-c. 1523), poet, b. probably in Suffolk. Educ. at Oxford, he afterwards travelled in Europe. He was attached to the court of Henry VII. his knowledge of Eng. poetry and literature procuring him an entry. His prin. work is *The Pastetyme of Pleasure, or the History of Graunde Amoure and la Bel Pucel*, containing the Knowledge of the Seven Sciences and the Course of Man's Life in this Worlde, 1509, an elaborate allegory in 46 chapters. He also wrote *The Convergion of Swerers*, 1509, and *Comfort of Lovers*, c. 1512. See W. Minto, *Characteristics of English Poets*, 1874, and J. M. Berdan, *Early Tudor Poetry*, 1920.

Haweswater, lake in Westmorland, England, 14 m. N. of Kendal, now a reservoir for Manchester to which it is linked by an aqueduct over 80 m. long. When fully developed H. and the adjoining catchment areas will supply 75-100 million gallons of water per day.

Hawfinch (*Coccothraustes coccothraustes*), species of the Grosbeak genus and Finch family, a good deal larger than the chaffinch. The male bird has brown and black markings on the head, black wing quills, and white tip of the tail, and the neck crossed at the back by a broad band of ash colour. It is a timid bird and perches on the topmost branches of trees, where it commands a good outlook, and is not easily discovered. The nest is built in lichen-covered trees, of twigs and mosses. Its food consists of the fruit of the pine, hornbeam, plum, cherry, haw-

thorn, laurel, holly, etc. It is abundant in S. Europe, and is distributed in the temperate parts of Asia. It is not uncommon in some parts of England, but in Scotland is very rare.

Hawick, par. and burgh in SW. Roxburghshire, Scotland, 52 m. by rail SSE. of Edinburgh. The tn adapts its topographical arrangement to the course of the R. Teviot and Slitrig, a handsome bridge being built across the former. H. is a place of great antiquity; the Moat is an artificial earthen mound, and part of Tower Hotel was at one time the peel-tower of the Douglas family, and later a residence of the duchess of Monmouth. H. is a woollen manufacturing centre, the earliest branches seeming to be hosiery, estab. in 1771, and tweed, estab. about 1820. The Common Riding, a traditional festival, is held annually. Stobs, a military camp, is 3 m. to the S. Pop. 16,700.

Hawk, term applied in a general way to all the diurnal birds of prey with the exception of vultures and eagles. Of the



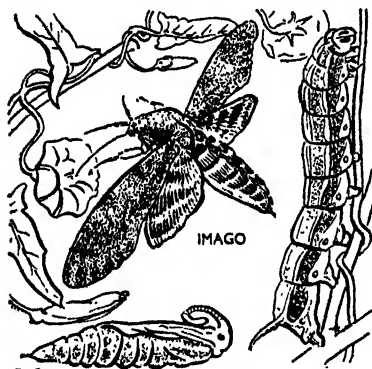
Arthur Brook

SPARROWHAWK AND YOUNG

H.s proper, the chief Brit. species are members of the genus *Accipiter*, the goshawk (now virtually extinct in the Brit. Isles) and sparrowhawk. H.s are distinguished by their short wings, and yellow eyes. See also FALCONRY.

Hawk-Eagle, species of hawk of smallish size, belonging to the genera *Spizaetus* and *Morphus*; natives of warm climates, and often very beautiful in form and colour. Some species are provided with well-developed crests which extend backwards from the crown of the head. An Indian species is called 'peacock-killer' and is exceedingly destructive to gamebirds of every description; and in Africa there is a species 31 in. long. H.s are often termed 'crested eagles,' the crest being best seen in a species of *Morphus* from Guiana, though it is absent in a bird of the genus *Nieadethus* in India.

Hawk-moth, species of Lepidoptera belonging to the family Sphingidae, sometimes also known as 'sphinx-moth,' the name being derived from the resemblance shown in the caterpillar stage to the Egyptian Sphinx. There are about 500 species, of which 17 are found in the Brit. Isles. The adults are thick-bodied and the forward pair of wings are narrow with oblique outer edges. The caterpillars are smooth and striped, and usually furnished with an erect horn at the hinder end. Examples are the privet H., the pine H., the deathhead moth, the humming-bird H., the poplar H., and the convolvulus H. Most species are active by night.



HAWK-MOTH

Hawkbit, *Leontodon*, genus of perennial herbs with yellow flowers, resembling dandelion. *L. autumnalis*, autumnal H., *L. hispidus*, rough H., and *L. leysleri*, hairy H., are common grassland weeds in Britain.

Hawke, Sir Edward, Baron Hawke of Lorton (1705-81), admiral, b. London; entered the navy in 1720, becoming commander in 1733. In 1744 he distinguished himself in the action off Toulon, commanding the *Berwick*, one of the few ships properly handled. In 1747 he became a rear-adm., and gained a victory over the Fr. off Finisterre. For this service he was knighted and became M.P. for Bristol the same year. He became an adm. in 1757. His chief fame was gained in 1759 after his attack on Marshal Conflant in Quiberon Bay, which resulted in the destruction of the Fr. fleet, and the collapse of their invasion scheme. In 1766 he was made First Lord of the Admiralty and created Baron H. See M. Burrows, *Life of Hawke*, 1883.

Hawke, Martin Bladen, 7th Baron (1860-1938), Eng. cricketer. He was captain of Yorks Co. Cricket Club for 28 years. Under him Yorks won the co. championship 8 times and from Aug. 1899

to July 1901 were unbeaten. He led teams to India, America, New Zealand, West Indies, South Africa, Canada and the Argentine. The death of his father compelled him to retire from the Australian tour, 1887. H. was president of the M.C.C., 1914-18, and a great administrator of the game.

Hawker, Robert Stephen (1803-75), poet and antiquary, b. Stoke Damerel, near Plymouth, eldest son of J. S. Hawker, vicar of Stratton, Cornwall. Educ. at Cheltenham Grammar School and Pembroke College, Oxford, in 1827 he carried off the Newdigate prize, was ordained in 1831, and was vicar of Morwenstow on the Cornish coast from 1834. H.'s ballads were direct and simple in style and composed in the true spirit of antiquity. None is better known than his spirited ballad based on the old Cornish refrain, 'And shall Trelawney die?' Other of his poetical pieces are: *Tendrils by Reuben*, 1821, *Records of the Western Shore*, 1822, *Reeds Shaken with the Wind*, 1843, *Quest of the Sangraal*, 1864, *Footprints of Former Men in Cornwall*, 1893. See S. Baring Gould, *The Vicar of Morwenstow*, 1876; C. E. Byles, *Life and Letters of Robert Stephen Hawker*, 1905; M. F. Burrows, *Robert Stephen Hawker: A Study of his Thought and Poetry*, 1926; and M. Collin's novel, *Sweet and Twenty*, 1875, in which H.'s character is delineated under the name of Canon Tremaine.

Hawkers and Pedlars, itinerant dealers engaged in the business of carrying their goods for sale from place to place. The trade is regulated under special supervision of the legislature, this being made necessary by the opportunities afforded dealers with no fixed domicile of evading responsibility and practising fraud. By the Act of 1871, a pedlar is a person who sells articles, travelling without a horse or other beast, and certificates are supplied, to those desirous of carrying on the trade of a pedlar in good faith, by the chief officer of the police of the dist. for which they are asked. The Hawkers Act, 1888, defines a hawk as one who travels with a horse, or other beast, bearing or drawing a burden. A single act of selling does not constitute a pedlar, and persons who travel about seeking orders for goods, as agents, sellers of fish, fruit, victuals, and exposing goods for sale in a public market, do not come under the category. The fee for a pedlar's certificate is 5s., and a hawk's licence can be taken out at a cost of £2.

Hawkes, Charles Francis Christopher (1905-), prof. of European archaeology in the univ. of Oxford since 1946, and previously a keeper in the dept of Brit. and medieval antiquities in the Brit. Museum. He has directed excavations on prehistoric and Rom. sites in Britain, particularly in Hants. His many pubs. include *Archaeology in England and Wales 1914-31*, jointly with T. D. Kendrick, 1932; *Winchester College*, 1933; *The Prehistoric Foundations of Europe*, 1940; *Prehistoric Britain*, jointly with Jaquetta Hawkes, 1943, 1947; research

report of the Society of Antiquaries on *Camulodunum*, with M. R. Hull, 1947.

Hawkes Bay, in New Zealand, North Is., between Auckland and Wellington, on the E. coast. It is enclosed on the NE. by Mahia Peninsula, and extends S. to Cape Mata-mawi, a total distance of about 60 m. In 1769 Cook entered it in the *Endeavour*, and in 1848 the dist. was occupied by Europeans. It is one of the most important primary production areas.

Hawkesbury, one of the chief rivs. of New South Wales, Australia, flowing eastward and formed by the union of the Nepean and Grose R.s. The united stream forms the N., W., and E. boundaries of Cumberland co., and, after a course of about 60 m. eastwards, falls into Broken Bay. It is navigable for vessels of 100 tons, but is liable to great and rapid inundations, produced by the fall of rain on the Blue Mts. Its banks consist of fine alluvial soil. In 1889 railway connection between Adelaide and Brisbane was completed by a bridge over the riv. Total length, 330 m.

Hawkesworth, John (c. 1715-73), miscellaneous writer, b. London, of humble parentage. In 1744 he succeeded Dr Johnson as compiler of the *Gentleman's Magazine*. In 1752 he started, with Johnson and others, *The Adventurer*. H. was the editor, and of the 140 papers, wrote some 72. In 1755 he pub. *The Works of Jonathan Swift*, with historical notes and explanations, and prepared the account of Capt. Cook's first voyage, forming part of his own pub., *Voyages*. He also wrote an oratorio, *The Fall of Egypt*, 1774, sev. essays, and some plays.

'Hawkeye State,' see IOWA.

Hawkhurst, par. partly in Kent and partly in Sussex, England, 12 m. NW. by W. of Rye by rail. Pop. 3000.

Hawking, see FALCONRY.

Hawkins, Sir Anthony Hope (1863-1933), author whose pseudonym was Anthony Hope, b. London, second son of E. C. Hawkins, vicar of St Bride's, Fleet Street. Educ. at Marlborough and Oxford, where he was president of the Union, he studied law and was called to the Bar in 1887. He began to write early, but it was not until he pub. *The Dolly Dialogues*, 1894, that he became generally known. The best of his many books are *The Prisoner of Zenda*, 1894, its sequel, *Rupert of Hentzau*, 1898, *The King's Mirror*, 1899, *Quisante*, 1900, and *Second String*, 1910. A master of dialogue, he designed a large portrait-gallery of interesting characters from music-hall singers to statesmen. His *Prisoner of Zenda* added to the language a new adjective, 'Ruritania', signifying the picturesque and romantic kingdoms of fiction. H. was knighted in 1918. His later work includes: *A Young Man's Year*, 1915, *Captain Dieppe*, 1918, *Beaumaroy Home from the Wars*, 1919, *Lucinda*, 1920, *Little Tiger*, 1925, and *Memories and Notes*, 1927. His plays include *The Adventure of Lady Ursula and Pilkerton's Peacocks*. See Sir C. Mallet, *Anthony Hope and His Books*, 1935.

Hawkins, Sir Henry, Baron Brampton (1817-1907), judge, b. Hitchin, Herts, and educ. at Bedford School. He was called to the Bar in 1843 and joined the home circuit and Herts sessions; took silk in 1858, and for the next 18 years was one of the most prominent leaders of the Bar. He was engaged in many important cases; his well-chosen language and lively intelligence succeeded in winning for him the verdicts of juries. In 1876 appointed judge of the High Court of Justice; knighted and transferred to the Exchequer Div. the same year. H. figured in the Tichborne trials and many others of equal importance. As a criminal judge he had few equals, though Sir Edward Clarke, K.C., in *The Story of My Life*, 1918, severely criticises his conduct as a judge. The so-called *Reminiscences* of H., pub. in 2 vols. in 1904, contain some amusing anecdotes; but the vols. are clearly the work of the editor, Richard Harris, the witty Q.C. who wrote the very entertaining *Hints on Advocacy*, 4th ed., 1880.

Hawkins, or Hawkyns, Sir John (1532-95), seaman and naval commander, b. Plymouth. While quite a young man he made sev. voyages, and was the first Englishman to traffic in slaves. In 1573 he was made navy treasurer, and was knighted as a reward for his services against the Armada in 1588. In the mustering of the Eng. fleet to defend the country against the Spaniards, H. was capt. of the *Victory*. While at Plymouth he served under Drake, and was a member of the council of war. In 1595 he served in an expedition, ordered to the West Indies under the command of Drake, to the Sp. Main, but d. at sea off Porto Rico. He left one son, Sir Richard H. (q.v.), also a naval commander. *True Declaration of the troublesome voyage of M. John Hawkins to the parties of Guynæa and the West Indies* was pub. in 1569.

Hawkins, Sir John (1719-89), lawyer, antiquarian, and musical historian. He became an attorney, in 1761 a Mddx magistrate, and in 1763 chairman of the Quarter Sessions. He is now remembered for his *History of Music*, which rivalled Burney's and was pub. in 5 vols. in 1776.

Hawkins, or Hawkyns, Sir Richard (c. 1562-1622), naval commander, son of Adm. Sir John H. He served under Drake, and took part in the defeat of the Armada (Aug. 1588) and in the subsequent descent on the Portuguese coast in 1589. Three years later he sailed in the *Duinity* on a voyage round the world. He touched Brazil, passed the Straits of Magellan, and took and plundered Valparaiso, but was defeated and wounded after a hard fight in San Mateo Bay, and imprisoned in Spain till 1602, when he was ransomed and knighted. Later he became vice-adm. of Devon and second-in-command in Sir Robert Mansell's fleet against the Algerine pirates (1620-1). See his *Observations on his Voyage into the South Seas*, with biography by Sir C. R. Markham, 1878.

Hawk's-beard, see BARCKHAUSIA.

Hawshaw, Sir John (1811-91), engineer, b. Leeds in the W. Riding of Yorks. He constructed various docks, Holyhead Harbour, the Severn tunnel (1887), Charing Cross and Cannon Street railway stations and bridges, and part of the Underground Railway of London.

Hawksmoor, or Hawkesmore, Nicholas (1661-1738), architect, probably b. Ragnall, near Tuxford, Notts. Became 'clerk' to Sir C. Wren (q.v.) at 18 years of age; and thereafter worked for Wren in various capacities; at St Paul's, Westminster Abbey, Chelsea and Greenwich Hospitals, Winchester, Whitehall, Kensington, and St James's Palaces; also for Sir J. Vanbrugh (q.v.) at Castle Howard and Blenheim Palace. He also had a substantial practice on his own account, and favoured the Baroque style. His prin. buildings were additions to Queen's College and All Souls' College at Oxford; the Clarendon building, Oxford; and the London churches of St Alfege, Greenwich, 1712-14, St Anne, Limehouse, 1712-24, St George-in-the-East, 1715-23, St Mary Woolnoth, 1716-27, St George, Bloomsbury, 1720-30, Christ Church, Spitalfields, 1723-9.

Hawkweed, or Hieracium, genus of perennial herbs, family Compositae, characterised by yellow, orange, or red flowers. A difficult genus for the taxonomist, as species number over 10,000; chiefly of temperate, alpine, and arctic regions of the N. hemisphere, but some of tropical areas. Over 260 Brit. species have been described.

Hawkwood, Sir John (d. 1394), Eng. soldier, probably b. in Essex. He won renown and riches as a condottiere in Italy, where he was known as Giovanni L'Acuto. He had previously distinguished himself at Crécy and Poitiers, and been knighted by Edward III. From 1363 onward he fought in the It. wars on different sides, and was finally persuaded (1375) to fight in the battles of Florence for an ann. pension.

Hawkyns, Sir John, and Sir Richard, see HAWKINS.

Hawnes School, public school for girls, founded in 1929 at Haynes Park, Beds, and situated on a ridge overlooking the Ouse Valley.

Haworth, moorland vil., part of the bor. of Keighley, 3 m. S. of the tn centre, in the W. Riding of Yorks, England. Charlotte Emily, and Anne Brontë, the writers, resided here from their earliest years, and descriptions of the moorland scenery are to be found in their novels, notably *Wuthering Heights*, by Emily Brontë. The old church of H. has been restored, and the graves of Charlotte and Emily Brontë are in it. The parsonage, where they lived, is now the Brontë museum.

Hawthorn (O.E. *haga*-, *hæg*-, or *hege-thorn*), genus of shrub or small tree belonging to the species *Crataegus* (q.v.). Chinese H. is *Photinia serrulata*. Winter H. is the name for *Aponogeton* & *Isachne*.

Hawthorne, Nathaniel (1804-64), Amer. novelist, b. Salem, Massachusetts, son of

a sea captain. He was educ. at Bowdoin College, Maine, where he had Longfellow for a fellow-student. He worked for a time in the custom house, but did not find this congenial, and turned to writing. His earliest efforts, apart from an unsuccessful novel, *Fanshawe*, 1828, were short tales and sketches, which appeared in periodicals and were collected as *Twice-told Tales*, 2 series, 1837, 1842. In 1841 H. joined for a few months the socialistic community estab. by the Transcendental Club at Brook Farm, but soon tired of it, and in the next year he married Sophia Peabody, and set up house in Concord in an old manse formerly tenanted by Emerson, whence proceeded *Mosses from an Old Manse*, 1846. In 1850 he pub. his finest work, *The Scarlet Letter*, one of the greatest Amer. novels, and in the following year the equally famous *House of the Seven Gables*. Other works of this period are a vol. of stories, *The Snow Image*, 1851, *The Blithedale Romance*, 1852, and his children's books, *A Wonder Book* and *Tanglewood Tales*. In 1853 he received from his friend Franklin Pierce, on his election to the presidency, the appointment of U.S. consul at Liverpool, which he retained for 4 years. Then, in consequence of a threatened failure of health, he went to Italy, and began his story of *The Marble Faun*, pub. in England in 1860 under the title of *The Transformation*. The last of his books pub. during his lifetime was *Our Old Home*, 1863, notes on England and the Eng. He had returned in 1860 to America where, with failing health and powers, he passed his remaining years. After his death there were pub. *The Ancestral Footstep*, *Septimius Felton*, *Dr. Grimshawe's Secret*, and *The Dolliver Romance*, all more or less fragmentary, and in 1932 his *American Notebooks* were ed. by R. Stewart. Most of H.'s work is pervaded by a strong element of mysticism, and a tendency to dwell on the borderland between the seen and the unseen. His style has a distinctive grace and charm, rich, varied, suggestive, and imaginative. See lives and studies by H.'s son Julian, 1885; H. James, 1883; M. D. Conway, 1890; G. R. Woodberry, 1902; N. Arvin, 1929; C. Mather, 1940; and L. S. Hall, 1944.

Hawtrej, Sir Charles Henry (1858-1923), actor-manager and playwright; son of the Rev. John H., an Eton master. H. was first and foremost a racing man, but he achieved success both in England and in the U.S.A. as a first-class comedian. Took leading parts in: *The Man from Blankley's*; *The Private Secretary*; *The Little Damsel*; *The Naked Truth*; *Inconstant George*; *General John Regan*; and *Ambrose Applejohn's Adventure*.

Hawtrej, Edward Craven (1789-1862), headmaster and provost of Eton College, b. Burnham, near Eton. He entered the school, with which his family had been connected for nearly 300 years, in 1799. See life by T. Thackeray, 1896.

Hay, George Campbell, see SCOTTISH GAELIC LANGUAGE AND LITERATURE.

Hay, Sir Gilbert (fl. 1456), Brit. poet and translator. As a young man he was chamberlain to Charles VII of France. Returning to Scotland about 1445, he resided with the earl of Caithness, and at his wish made translations from the Fr. which are the earliest examples of Scottish vernacular prose. They are the *Buke of the Law of Armys*, *Buke of the Order of Knighthood*, and *Buke of the Governauce of Princes*, and were ed. by J. H. Stevenson, 1901-14. H. also trans. from the Fr. *The Buke of the Conqueror Alexander the Great* in some 20,000

Hay, Ian, see BRITH, JOHN HAY.

Hay, John (1838-1905), Amer. statesman and author, b. Salem, Indiana. He was one of the private secretaries to President Lincoln, 1861-5. In 1878-81 he became first assistant secretary of state. In 1897, on the inauguration of President McKinley, H. was appointed ambas. to Great Britain, becoming subsequently secretary of state. After the war with Spain of 1898 he directed the peace negotiations. Among his most notable achievements were the Hay-Pauncefote treaty (q.v.) with Great Britain in 1901, and the settlement of the Alaskan boundary dispute between the U.S.A. and Canada in 1903. He pub.: *Pike County Ballads*, 1871, of which the most famous are 'Little Breeches' and 'Jim Bludso'; *Castilian Days*, 1871; a vol. of poems, 1890; *Abraham Lincoln*, 1890, in conjunction with G. Nicolay, etc. See *Addresses of John Hay*, 1906; *Letters from John Hay and Extracts from his Diary*, 1908; W. Thayer, *The Life and Letters of John Hay*, 2nd ed., 1916.

Hay: 1. Mkt tn and par. of Breconshire, Wales, on the Wye some 10 m. NE. of Brecon, an angling and walking centre. Pop. 1450.

2. Post tn and cathedral city of New South Wales, Waradgery co., in the middle of the Riverina dist., 70 m. N. of Deniliquin. Pop. 3040.

3. Riv. of Alberta, Canada, descending from the E. side of the Rocky Mts, and flowing into Great Slave Lake, 350 m. in length, and navigable for 140 m. The Alexandra Falls, one of Canada's largest waterfalls, is located on this riv. (drop of the falls, c. 150 ft.).

Hay and Ensilage. The principle of haymaking is that when the moisture content of grass, which is about 80 per cent, is reduced to 15-20 per cent, the material is sufficiently desiccated to prevent micro-organisms from bringing about decay. Using modern mechanised methods, the hay crop is usually mown while it is in flower and it is then turned over at intervals by turning machines to ensure thorough drying. If the weather is fine the hay is ready for stacking or making into bales after 5 to 7 days. In the wetter parts of the country and on the Continent it has been the practice to build the hay into heaps ('cooks' or 'pikes') or on to wooden frames ('tripods') or fences. By this means rain is prevented from spoiling the hay and drying is facilitated.

Although good hay should resemble the original crop from which it was made, in practice something like 10-35 per cent of the dry matter and 30-40 per cent of the nutrients are lost in the process. The average composition of clover hay and meadow hay is:

	Clover Hay	Meadow Hay
Dry matter	85	85
Protein equivalent	7.0	3.1
Starch equivalent	45.0	35.6

Hay production per ac. in Great Britain is usually over 2 tons, but the quality of the hay is relatively poor (see also GRASS LANDS).

Ensilage is the practice of preserving green food for cattle in 'silos.' It has long been known that forage crops can be preserved in a relatively fresh state by this means, but it is only recently that the technique has been recognised as a valuable method of conservation less dependent on the weather than hay-making. The silo may be a pit dug in the ground, or the green material may simply be stacked on the ground. Pits 15 ft wide and 5 ft or more deep are a popular type of silo, but it is usually more convenient to build the crop into a wedge-shaped 'clump' on top of the ground, over which a tractor can run. Crops suitable for ensilage are grasses, clovers, oats, vetches, rye, maize, etc. They are mown and collected by some form of mechanical loader while still green. When placed in the silo a bacterial fermentation takes place and the crop is literally 'pickled.' Molasses are often added to aid this fermentation and decay is prevented by consolidating the grass, etc., with a heavy tractor so that air is excluded. The silage produced retains the identity of the original crop, is green or greenish-brown in colour, and smells of vinegar. It is a very nutritious food for dairy cows and beef cattle and is a cheap method of producing large quantities of milk and meat. See S. J. Watson and A. M. Smith, *Silage*, 1951.

Hay Fever, allergic condition characterised by hypersecretion of the nasal and conjunctival mucous membranes and due to hypersensitivity to pollens of grasses and other plants (see ALLERGY). The condition never occurs unless and until the sensitising pollens are liberated into the air, which, in this country, happens as a rule at about the middle to the end of May.

Hay-Pauncefote Treaty, treaty negotiated by John Hay (q.v.) on the part of the U.S.A., and Lord Pauncefote on behalf of Great Britain, abrogating the Clayton-Bulwer Treaty (q.v.), and providing for the construction of a Panama Canal (q.v.) under U.S.A. control and for its neutralisation on the same basis as the Suez Canal. When submitted to the Senate in 1900 it was ratified, but with such amendments, that Great Britain refused to ratify it. A further treaty was negotiated in 1901 and passed by the Senate. It demanded no guarantee of

neutrality, although the general principle of neutrality of the Clayton-Bulwer Treaty was retained, and in time of war the U.S.A. was given certain rights of control not definitely specified.

Haya, a Bantu tribe of W. Tanganyika, living near Bukoba on Lake Victoria. They had a single chief of their own, but to-day are becoming degenerate, and their indigenous culture is changing fast. Their staple crop is the plantain, from which both food and beer in great quantities are made. See H. Cory and M. M. Hartnoll, *Customary Law of the Haya Tribe*, 1945.

Hayange (Ger. *Hayingen*), Fr. tn in the dept of Moselle, on the Fensch. There are iron-mines and metallurgical industries. Pop. 10,300.

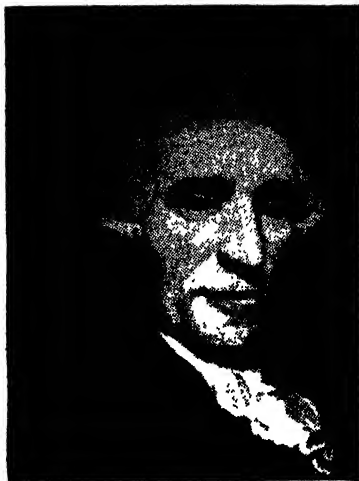
Hayaseca, Jorge, see ECHEGARAY.

Hayashi, Tadasu, Count (1850-1913), Jap. statesman, b. in Tokyo; sent to England by the Tokugawa Gov. among the first batch of students. He had much to do with the modern rise of Japan, and figured in the revolutionary movement. He obtained office in 1871 and rapidly rose to the front rank; serving as vice-minister of foreign affairs, and then being appointed to represent his country—first in Peking, then in St Petersburg, and finally in London. He was created viscount for his services in negotiating the first Anglo-Jap. alliance. Throughout the Russo-Jap. War he remained in London. He returned to Tokyo in 1906, and was created a count in 1907 for services performed during the war. He trans. many Eng. works into Japanese and was author of *For His People*, 1903.

Hayastan, see ARMENIA.

Haydn, Joseph (1732-1809), Austrian composer, b. at the Lower Austrian vil. of Rohrau, son of a poor wheelwright. At the age of 8 he was sent as a chorister to St Stephen's Cathedral in Vienna. He was dismissed in 1749, played in street bands, and in 1752 wrote music for a comedy, *The Crooked Devil*. In 1754 he became a servant-pupil of Porpora and the following year was appointed to a country gentleman at Weinzierl, and in 1759, after a precarious period of teaching in Vienna, to another at Lukavec. In 1760 he married a shrewish woman named Keller, from whom he managed to live apart most of the time owing to his appointment to the Esterházy princes, first at Eisenstadt and afterwards at the palace of Esterházy. At the latter he formed his own orchestra and wrote symphonies, operas (some for puppets), and chamber music. He remained musical director there until 1790, and spent most of his life in the country, settling permanently in Vienna only after that date. He paid 2 visits to London, in 1790-2 and 1794-5, receiving the D.Mus. degree at Oxford in 1791. 104 of his symphonies and over 80 string quartets are preserved, besides vast quantities of other instrumental music, 24 stage works, incidental music for plays, 12 masses, the oratorios *The Creation* and *The Seasons*, and various other vocal works. The

classical forms of the symphony and the string quartet were consolidated mainly by H.



Courtesy of the Royal College of Music

JOSEPH HAYDN

Portrait by Thomas Hardy, 1791

Haydock, tn of Lancs, England, 3½ m. ENE. of St Helens, with collieries and iron foundries. New industrial developments are taking place. Here is H. Park race-course. Pop. 11,838.

Haydon, Benjamin Robert (1786-1846), painter, b. Plymouth, chiefly noted for his historical paintings. A man of indomitable, high-flaming energy and industry and full of a conviction of his own power, which, however, was not justified. But some of the most distinguished spirits of the time were among his friends, especially Keats. He suffered a heavy disappointment in the rejection of his historical cartoons for the decoration of the new Houses of Parliament. Among his works are: 'Christ's Entry into Jerusalem' (now at Philadelphia), the fruit of 6 years' labour; 'The Raising of Lazarus'; and, in less grandiose vein, the excellent 'Chairing the Member' (Tate Gallery). H.'s life-long struggle with debt and neglect, fancied or real, so preyed upon his mind that he d. by his own hand. Probably his chief titles to the regard of posterity are his championship of the Elgin Marbles and his *Autobiography and Journals*, pub. 1847 and full of vivid description. See S. Colvin, *Keats*, 1887; G. Paston, *B. R. Haydon and his Friends*, 1905; and E. George, *The Life and Death of Benjamin Robert Haydon*, 1948.

Haydon Bridge, eccles. par. in North-umberland, 6 m. NW. of Hexham. Agriculture is the main occupation. Pop. 2050.

Haye, La. see HAGUE, THE.

Hayes, Catharine (1690-1726), Eng. murderess, *née* Hall, b. near Birmingham. She married John H., a carpenter, and after leaving Birmingham they set up a small shop in Tyburn, taking in lodgers. With the help of 2 of them—Wood and Billings—she murdered her husband in Mar. 1726, and was arrested a few weeks later. At the trial she pleaded 'not guilty,' but was convicted and sentenced to be burnt alive. She was eventually hanged at Tyburn.

Hayes, Catherine (1825-61), Irish operatic and ballad soprano, b. Limerick. She studied at Dublin, and frequently appeared at concerts there. In 1842 she went to Paris, where she studied under Manuel Garcia, and on his advice proceeded thence to Italy, where she was engaged at the Scala Opera of Milan. In 1849 she came to England and made her debut at Covent Garden.

Hayes, Helen (1900-), Amer. actress, b. Washington, D.C. Married Charles MacArthur (d.). She first appeared on the stage at the National Theatre, Washington, 1905, as Prince Charles in *The Royal Family*, and then played many parts as a child actress. As she grew up she soon made her mark as a leading actress, playing all sorts of roles, from light comedy to Shaw and Barrie. In 1935 she appeared at the Broadhurst Theatre, New York, as Queen Victoria in *Victoria Regina* and made a tremendous success, afterwards touring in it from coast to coast. Her performance gained her the Drama League of New York's medal for the most distinguished performance in 1936. She played many Shakespearean roles, and made her first appearance in London at the Haymarket in 1948 as Amanda in *The Glass Menagerie*. She has also a very successful record in films.

Hayes, Isaac Israel (1832-81), Amer. Arctic explorer. In 1860-1 he conducted an Arctic expedition to Smith Sound, and 8 years later another, fully described in his work, *The Land of Desolation*, 1871. He also pub. *An Arctic Boat Journey*, 1860, and *The Open Polar Sea*, 1867.

Hayes, Patrick Joseph (1867-1938), Amer. cardinal, b. New York; son of Daniel H. Graduated Manhattan College, 1888. Priest, 1892. Chancellor of New York, 1903. D.D., Rome, 1904. President, Catholic College, 1903-14. Domestic prelate to Pius X, 1907. Auxiliary bishop of New York, 1914. Rector, St Stephen's church, Oct. 1915. Catholic chaplain-bishop, U.S.A. Army and Navy, 1917. Archbishop of New York, 1919. Cardinal, 1924.

Hayes, Rutherford Birchard (1822-93), 19th president of the U.S.A. He graduated at Kenyon College, Ohio, in 1843, and Harvard Law School in 1845, and practised law in Cincinnati from 1849 to 1861. At the outbreak of the Civil war in 1861 he

was appointed maj. of a volunteer regiment, and saw active service in Virginia. He retired as a maj.-gen. In 1866 he was elected as a congressman from Ohio, and was governor of that state in 1867, 1869, and 1875. In 1876 the Republicans nominated him for president against the Democratic nominee, the reform governor of New York, Samuel J. Tilden (q.v.). As president, H. stood like a rock against the corruptionists, devoting his efforts to reforming the civil service system and the resumption of specie payment. He left the White House as he entered it—an honest, hard-working public servant. See C. R. Williams, ed., diaries and letters, 5 vols., 1922-6, and biographies by W. D. Howells, 1876, C. R. Williams, 1914, and H. J. Eckenrode and P. W. Wight, 1930.

Hayes: 1. Large par. forming the N. and greater part of the urb. dist. of H. and Harlington, Middx, England, about 12 m. from London. It manufs. aircraft, gramophones, and printing presses. Harlington is a vil. lying N. of the Great West Road and London Airport. Wm Byrd, the composer, lived there 1577-92. The par. church has a fine Norman doorway. H. and Harlington return 1 member to Parliament. Combined pop. 64,900.

2. Residential dist. of Bromley (q.v.), with a 200-ac. common. Wm Pitt the younger was b. here, and his father, the earl of Chatham, d. here.

Hayingen, see HAYANGE.

Hayle, seaport in and seaside resort of W. Cornwall, England, 54 m. SE. of St Ives. Industries include engineering, shipping, and chemicals, and horticulture. Pop. 5000.

Hayles Abbey, ruins of a Cistercian abbey, situated 2 m. NE. of Winchcomb and 10 m. NE. of Cheltenham, Gloucestershire, England, at the foot of the Cotswolds. The abbey was founded in 1246 by Richard, earl of Cornwall and king of the Romans, brother to Henry III. In 1270 the monks were presented with a phial containing the 'Blood of Hayles,' which attracted numerous pilgrims until the dissolution of the monasteries. Only a few walls, and notably some of the pointed bays of the cloisters, are now remaining, but the foundations of the great church have been carefully indicated by the planting of yew hedges. There is a museum containing a collection of bosses, early tiles, and other relics of the abbey.

Hayley, William (1745-1820), poet and biographer, b. Chichester. Educ. at Eton and Trinity College, Cambridge, he studied law for a short time, but abandoned it for a life of literary ease. He won fame by his *Essay on History*, 1780, *Essay on Painting*, 1781, *Essay on Epic Poetry*, 1782, and his poem in 6 cantos, *The Triumph of Temper*, 1781. His most memorable work is his *Life of Cowper*, 1803-4, of whom he was a friend. H. also wrote some plays, and lives of Milton, 1796, and Romney, 1809. His own *Memoirs* were pub. in 1823. See M. Bishop, *Blake's Hayley*, 1951.

Hayman, Francis (1708-76), painter, b. Exeter. Worked as a scene-painter at Drury Lane Theatre. Also became known as a designer by his illustrations to Sir T. Hanmer's ed. of Shakespeare, and for Congreve's poems, Smollett's *Don Quixote*, and the *Spectator*, 1747. He was the friend of Hogarth and Garrick, and one of the founders of the Royal Academy.

Haymarket Square Riot, riot in Haymarket Square, Chicago, 1886, in which 7 policemen and 4 citizens were killed and more than 100 persons wounded by a bomb when the police force tried to disperse an anarchist meeting. A number of anarchists were hanged.

Haymarket Theatre, London theatre standing in the Haymarket, opposite Charles Street, and next to Drury Lane the richest in theatrical tradition. During the patent monopoly it was a kind of chapel of ease or training-house to Drury Lane and Covent Garden. It was built in 1720, and leased to a company of Fr. actors, who opened it with *La Fille à la Mode*. Fielding's is the first great name connected with the theatre. In 1730 he produced the *Tragedy of Tragedies*, or *Tom Thumb the Great*, and became manager in 1734. Ten years later, Charles Macklin opened the Haymarket with a company composed chiefly of his own pupils. In 1747 it was rebuilt and Samuel Foote assumed the management, and in 1766 he obtained a patent for the theatre during his lifetime. Foote sold the Haymarket to Colman the Elder in 1776, who continued to manage it till 1794; and in 1820 Morris became manager and demolished the old house, erecting a new theatre a little farther N., which was opened in July 1821 with *The Rivals*. It was reconstructed to meet the requirements of Sir Squire and Lady Bancroft in 1880, and a large number of plays have been produced in it. Some of the successful plays in recent years have been the exquisite fantasy of J. M. Barrie, *Mary Rose*, 1920, the stirring *Dover Road*, 1922, *The Man with a Load of Mischief*, 1925, *Yellow Sands*, 1926, *The Ivory Door*, 1929, *The First Mrs Fraser*, 1929, *Ten Minute Alibi*, 1934, *Design for Living*, 1939, *Present Laughter* and *This Happy Breed*, 1943, *Lady Windermere's Fan*, 1947, *The Glass Menagerie*, 1948, *The Heiress*, 1949, *Waters of the Moon*, 1951, *The Chalk Garden*, 1956, and in 1957 *Flowering Cherry*. Many notable performances of Shakespeare have taken place at the H.; in 1931 *Hamlet* was produced, with a cast including Fay Compton, Irene Vanbrugh, and Godfrey Tearle, and it was also included in John Gielgud's season in 1944. It is one of the most successful theatres in London, and one of the most beautiful. See W. Macqueen-Pope, *Haymarket: Theatre of Perfection*, 1948.

Haynau, Julius Jakob, Baron von (1786-1853), Austrian gen., b. Kassel. Entered the Austrian Army in 1801, and saw much service in the Napoleonic wars, being wounded at Wagram. Between 1815 and 1847 he rose to the rank of field-marshal lieutenant. He fought with dis-

tinction in the It. campaigns of 1848-9, but showed ruthless severity at the capture of Brescia. In 1849 he was called to Vienna, and took supreme military command in Hungary, where, as in Italy, he was accused of brutality. On the restoration of peace he was appointed dictator of Hungary, but resigned in 1850. He came to England in the same year and was attacked by draymen when visiting a Southwark brewery. See life by C. von Schönhals, 1875.

Hayti, see **HAITI**.

Hayward, Abraham (1801-84), miscellaneous author, b. Wilton, near Salisbury. He was called to the Bar in 1838, and though he never acquired a considerable practice, he was made Q.C. in 1845. He wrote in the *Edinburgh*, the *Quarterly*, and *Fraser's Magazine* on many subjects, and his *Essays* (of which there are 3 series, collected 1858, 1873, 1874) are distinctly interesting. He wrote against the theory that Sir Philip Francis was Junius in *More about Junius*, 1868; in 1861 he ed. the autobiography of Mrs Piozzi. His best-known book is on *The Art of Dining*, 1852. His *Correspondence* was ed. by H. E. Carlisle in 1886.

Hayward, Tom (1871-1939), Eng. cricketer; played for Surrey, 1893-1914. H. was a great batsman, his chief strokes being the off-drive and cut. In 1906 he scored 3518 runs, a season's record surpassed only by D. Compton and W. J. Edrich in 1947. His career aggregate of 43,518 included 104 centuries, highest score: 315 not out v. Lancs, 1898. In 20 successive seasons he made over 1000 runs and in 1897 he achieved the 'double'. He appeared in 35 tests (29 v. Australia), and was J. B. Hobbs' mentor and batting partner; together they exceeded 100 for the 1st wicket 40 times.

Hayward's Heath, mrkt in Sussex, England, on the S. region railway, at the junction of Lewes branch, 12 m. N. of Brighton. The largest cattle sale in Sussex is held here. Pop. 11,000.

Hazaken, see **HILLEL**.

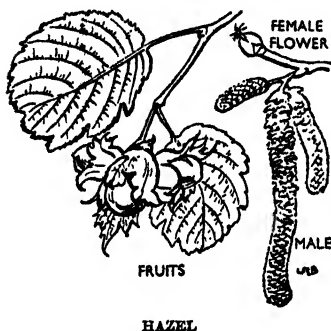
Hazaras, race of Mongolian origin occupying the country between Kabul and Herat, known to the W. provs. of Afghanistan as Taimanis, and in other dists. by the name of the ter. they occupy. They speak a dialect of Persian; are of middle size, stoutly made, with high cheek-bones and smooth faces.

Hazard (O.F., from Sp. *azar*, from Arabic *al* and *zar*, d.c.e), two-dice game, once fashionable in London and played at Crookford's rooms. The cruder Amer. 'craps' probably derives from it. One player is banker or 'setter', the other 'caster'. Caster calls his 'main'—any number from 5 to 9 inclusive—and throws. If he 'nicks'—throws the number called, or 12 when 6 or 8 is the main, 11 when 7 is the main—he wins. If he 'throws out'—rolls 2 or 3; or 11 or 12 when 5 or 9 is the main; 11 when 6 or 8 is the main; or 12 when 7 is the main—he loses. If he throws 'chance'—any other number—he goes on throwing until he throws chance again, when he wins, or main, when he loses.

Haze (possibly connected with A.-S. *hæas*, *heas*, grey, but origin of word uncertain). obscuring of the atmosphere by dust or smoke particles. In modern meteorological practice the word is restricted to occasions when the visibility (q.v.) lies between 1 and 2 kilometres.

Hazebrousk, Fr. tn in the dept of Nord, on the H. canal. As the prin. railway junction of Fr. Flanders, it was held with tenacity by the Brit. forces during the First World War, but was nearly lost during the final Ger. offensive in spring 1918 (see FRANCE AND FLANDERS, FIRST WORLD WAR CAMPAIGNS IN). H. has textile manufs., and a trade in agric. produce. Pop. 14,400.

Hazel (A.-S. *Hæsel*; Fr. *noisetier*, *coudrier*). *Corylus avellana*, family Betul. of which the fruit is a nut, is



HAZEL

distributed throughout Britain and all the temperate parts of Europe, Asia, and North America. Commonly found in hedges and coppices, reaching a height of about 12 ft. The leaves are alternate, and the male flowers appear in cylindrical catkins, while the female flowers are mere clusters of coloured styles at the extremity of the buds. A number of varieties are cultivated extensively in Kent around Maidstone.

Hazel Grove and Bramhall, urb. dist. of Cheshire, England, 3 m. from Stockport. Bramhall Hall is a very fine example of timber-frame architecture, dating from 1590-9, with some earlier features, and is now open as a museum. Pop. 20,010.

Hazel Park, city in Oakland co., SE. Michigan, U.S.A., a N. residential suburb of Detroit. Pop. 17,770.

Hazelrigg, Sir Arthur, see HASELRIG.

Hazing, see FAGGING.

Hazleton, city of Pennsylvania, U.S.A., 34 m. SSW. of Scranton in Luzerne co. It is served by the Pennsylvania and Lehigh Valley Railways. The chief manufs. are textiles, clothing, paper goods, radio and electrical equipment, shoes, machinery, and metal products.

It is a coal-mining tn, surrounded by large anthracite collieries. Pop. 35,500.

Hazlitt, William (1778-1830), critic and essayist, b. Maidstone in Kent. He was the son of a Unitarian minister who removed to Boston, U.S.A., in 1783 and 4 years later returned to settle at Wem in Shropshire. At his father's request young H. studied for the ministry at a Unitarian college in Hackney. His interests, however, were much more philosophical than theological. The turning point in his intellectual development was his meeting with Coleridge in 1798, described in one of his finest essays 'My First Acquaintance with the Poets.'



WILLIAM HAZLITT

Soon after this he studied art with a view to becoming a painter, but could not satisfy himself, and gave up the idea. He then definitely turned to literature, and in 1805 pub. his first book, *Essay on the Principles of Human Action*, which was followed by various other philosophical and political essays. About 1812 he became parl. and dramatic critic to the *Morning Chronicle*; in 1814 a contributor to the *Edinburgh Review*; and in 1817 he pub. a vol. of literary sketches, *The Round Table*. In 1817 also appeared his admirable *Characters of Shakespeare's Plays*, which was severely attacked in the *Quarterly Review* and *Blackwood's Magazine*, to which his democratic views made him obnoxious. He defended himself in a cutting *Letter to William Gifford*, the editor of the former. The best of H.'s critical work—his 3 courses of lectures, *On the English Poets*, *On the English Comic Writers*, and *On the Dramatic Literature of the Age of Queen Elizabeth*—appeared between 1818 and 1820. His next works were *Table Talk*, 1821-2, in which he attacked Shelley, and *The*

Spirit of the Age, 1825, in which he criticised some of his contemporaries. He then began what he intended to be his chief work, a life of Napoleon Buonaparte in 4 vols., 1828-30; written with great ability, it embodied unpopular views and failed of success. His last work was a life of Titian, in which he collaborated with Northcote. His earlier *Conversations with James Northcote*, 1826, is one of his most fascinating books, and many of his best essays appeared in the posthumous collections *Literary Remains*, 1836, *Sketches and Essays*, 1839, and *Winterslow*, 1839.

H. is one of the most honest and acute of Eng. critics, and has been described as 'the common sensible man raised to a high degree.' His chief principle of criticism as avowed by himself was that 'a genuine criticism should reflect the colour, the light and shade, the soul and body, of a work.' In his private life he was not happy. His first marriage, contracted in 1807, ended in a divorce in 1822, and he then formed a foolish infatuation for his landlady's daughter; this episode is described in his *Liber Amoris*, 1823. A second marriage with a Mrs Bridgewater ended in the lady leaving him shortly after. H. was possessed of a peculiar temper, which led to his quarrelling with most of his friends. But few writers have bequeathed to posterity work of such uniformly high quality. His *Complete Works* were ed. in 20 vols. by P. P. Howe, 1930-4, who also wrote a life, 1928; see also life by A. Birrell, 1902; W. C. Hazlitt, *Memoirs of William Hazlitt*, 1867; H. Pearson, *The Fool of Love*, 1934; C. M. MacLean, *Born under Saturn* (novel), 1943; and a bibliography by G. Keynes, 1931.

Hazlitt, William Carew (1834-1913), writer, bibliographer, and numismatist, b. London, grandson of Wm H. (q.v.). His works include: *History of the Origin and Rise of the Republic of Venice*, 1858, *Memoirs of William Hazlitt: with Portions of his Correspondence*, 1867; R. Dodsley, *A Select Collection of Old English Plays*, 1874-6, *The Lambs*, 1897, *Collections and Notes*, 1876-1903, *Shakespeare*, 1902, *Popular Antiquities of Great Britain*, 1905, and *The Hazlitts: An Account of their Origin and Descent*, 1911. See Katharine Anthony, *The Lambs*, 1948.

Head, Antony Henry (1906-), Brit. politician, educ. at Eton and the Royal Military Academy, Sandhurst. He was elected Conservative M.P. for Carshalton in 1945, and became a prominent opposition speaker. From 1951 to 1956 he was minister of war, and minister of defence, 1956-7, and in this capacity had close connections with the Anglo-Fr. intervention in Suez, 1956, which was so strongly criticised. He did not receive office in Macmillan's new gov.

Head, Sir Edmund Walker (1805-68), governor-gen. of Canada, b. near Maidstone, Kent. Educ. at Winchester and at Oriel College, Oxford. Made Poor Law Commissioner in 1841, and lieutenant-governor of New Brunswick in 1847. In

1854 he became governor-general of Canada, which position he retained till 1861, when he returned and was made a civil service commissioner and privy councillor in the course of a few years. He ed. F. T. Kugler's *Handbook of Spanish Painting*, 1854, and pub. *Ballads and other Poems*, 1868.

Head, Sir Francis Bond (1793-1875), soldier, traveller, and governor of Upper Canada, b. Hermitage, Kent. He entered the corps of Royal Engineers and served at battles of Waterloo and Fleurus. In 1825 he was placed in charge of an association formed to work the gold and silver mines of Rio de la Plata. In connection with this work he made sev. rapid journeys over the Andes and across the Pampas, described in his *Journeys across the Pampas*, 1826. Appointed governor of Upper Canada in 1835, his administration met with considerable opposition which culminated in a rebellion in 1837. He resigned office, and in 1838 was created a baronet. The rest of his life was devoted to literary pursuits. Among his pub. are: *Bubbles from the Brunnen of Nassau*, 1834, *A Faggot of French Sticks*, 1852, *The Royal Engineer*, 1869.

Head, Sir Henry (1861-1940), neurologist, b. Stamford Hill, London, and educ. at Charterhouse, Cambridge, and Univ. College, London. He qualified in 1890. He was appointed assistant physician to the London Hospital, 1896, and later physician and consulting physician there. In 1903 he decided to make observations on the sensory changes following the section of nerves and for this purpose submitted to the div. and suture of the radial and external cutaneous nerves of his own left arm. His subsequent study of the loss and restoration of function thus brought about was pub. in *Brain*, 1908, and led to a reclassification of the sensory pathways, at the same time raising his reputation to the highest level. This and other work was republished in his *Studies in Neurology* (2 vols.), 1920. His *Aphasia and Kindred Disorders of Speech* (2 vols.), 1926, is the most important work on the subject in the Eng. language. He was editor of *Brain* from 1915 to 1925; he was knighted in 1927. See *Dictionary of National Biography*, 1931-40, p. 410.

Head. The human body is obviously separable into head, trunk, and limbs, of which the first is naturally divided into skull and face. Vertebrates possessing a H. are termed *Cranialia*, the higher types of which have the hard bony case of the skull containing the brain, which is continuous with the spinal cord, while the cavity of the face is almost entirely occupied by the mouth and pharynx; into the latter of which the upper end of the alimentary canal opens. It will be seen that the fundamental structure of the human body is that of a double tube, the dorsal and ventral, and in a comparison of the H. with the trunk it will be found that in the former the dorsal tube is large relatively to the ventral. This condition is reversed in the trunk. The head is also

remarkable on account of the large number of organs of special senses which it contains, such as those of smell (nose), taste (tongue), sound (ear), sight (eye) (*see* under these headings), hence there is no necessity to enlarge here on the vital character of this part of the human body.

Development.—In the embryo the distinction between the H. and trunk by the formation of a cervical constriction is a change of comparatively late occurrence, though long before this constriction appears the characteristic features of the parts have become apparent. At first the H. may be said to consist wholly of the cranial part, the face being developed later from a series of out-growths or bars of the cranium.

Head-hunting, custom once prevalent among all Malay races, but now rapidly dying out, of obtaining and treasuring the heads of their enemies. Even to-day it survives among the Dyaks of Borneo and other E. tribes, e.g. among the natives of the Solomon Is. It is believed to have had its origin in religious motives, the worship of skulls among the Malays being universal, and it is said to have existed in the Philippine Is. in 1577. The chief examples of head-hunters are among the hill tribes on the N.E. frontier of India and Assam, and in Borneo. Severe repressive measures, however, have led to the decrease of the custom. *See* C. Bock, *Headhunters of Borneo*, 1881.

Headache, medically speaking, any pain in the head. Of all symptoms H. is probably the one complained of most often. The number of illnesses known to be associated with H. vary from the trivial to the severe and are so numerous that they cannot be listed here. Aetiological H. may be due to (1) abnormal conditions within the cranium or on the scalp; (2) abnormal conditions in other parts of the body producing H. by toxic or other means; and (3) psychological factors. The essential physiological mechanism causing H., however, remains obscure. The recent work of Wolff in America and Pickering in England has emphasised the role of the cerebral blood vessels within the cranium as pain-sensitive elements, but the nerves of the scalp, the trigeminal (or 5th cranial) nerve and the meninges (*see* BRAIN) play an important part in the mechanism of many H.s. The brain substance in itself is insensitive and it is believed that pain results from the excitation of pain receptors on the blood vessels. Most H.s arise from disturbance of the vascular structures, the main disturbing mechanisms being distension, dilatation, and traction of intracranial arteries. Not so common are displacement of venous sinuses and local inflammation affecting pain-sensitive structures, i.e. the mastoid cavity and the sinuses. It is probable that even the H. of a cerebral tumour is due to distortion of the cerebral blood vessels and not due to intracranial pressure, though rapid changes of intracranial pressure, as after lumbar puncture, may cause severe H. It may sometimes

be difficult to distinguish the H. of psychological origin from that of organic cause, and indeed there may often be a psychological element in organic disease. As a rule, however, organic H. is always temporarily relieved to some extent by analgesics, whereas a psychological H. is not. Eye-strain is seldom a cause of H. *Treatment* of H. consists in finding the underlying cause and, if possible, removing it. *See* J. Purdon Martin, *British Medical Journal*, 1949, 2, 83, and 1950, 1, 778.

Headlam, Arthur Cayley (1862-1947), Eng. prelate, Regius prof. of Divinity, Oxford; principal of King's College, London, 1903-12. He made the theological faculty into the largest theological college in the Church of England. Bishop of Gloucester, 1923-45. His publs. include: *History, Authority and Theology*, 1909, *St Paul and Christianity*, 1913, *The Church of England*, 1924, *Economics and Christianity*, 1926, *The New Prayer Book*, 1927, *Christian Unity*, 1930, and *The Holy Catholic Church*, 1945.

Headless Cross, eccles. par. in Warwickshire and Worcestershire, England, 5 m. SE. of Bromsgrove. Pop. 4600.

Headmasters, Incorporated Association of, founded 1890, incorporated 1894. The association has exerted itself to place before the educational authorities and the public at large the issues raised by the organisation of secondary education under central and local authorities. To be qualified for membership it is necessary to be a headmaster of a public secondary school. More than 1200 headmasters are members.

Headmasters' Conference. In 1869 the Rev. Edward Thring, headmaster of Uppingham School, invited the headmasters of 37 of the leading schools of England to meet at his house and form a school society which should have an ann. conference on educational matters. Twelve men attended the first meeting, but the society gradually developed and was incorporated in 1909. The number of members of the Conference is limited to 200. Conferences are now held either at Oxford or Cambridge.

Headon Beds, fresh-water, brackish water, and marine sediments formed in Lower Oligocene times. Predominantly clays, marls, and sands with occasional lignite and limestone. Named after Headon Hill, Isle of Wight, the type exposure. Found also in Hants.

Heal, A., *see* FURNITURE.

Health, *see* FOOD AND DIET; HYGIENE; NATIONAL HEALTH SERVICE; PUBLIC HEALTH; SANITATION; WORLD HEALTH ORGANISATION; etc.

Health, Bill of, *see* BILL OF HEALTH.

Health, Ministry of. This dept of state was created by the Ministry of Health Act, 1919, to exercise in England and Wales powers with respect to public health and local gov.; and to it were accordingly transferred by the Act: (1) all the powers and duties of the Local Gov. Board, and the National Health Insurance Commission (2) the powers of the Board

of Education relating to the health of expectant and nursing mothers and of children under 5, and to the medical inspection and treatment of children and young persons; (3) all the powers of the Privy Council and of the lord president of the Council under the Midwives Acts. Responsibility for the National Health Insurance and the Widows', Orphans' and Old Age Contributory Pensions schemes was transferred to the Ministry of National Insurance in 1945. The functions of the M. of H. in relation to local gov., rating and valuation, housing, rent control, burials, and coast protection were transferred to Ministry of Housing and Local Gov. in 1951. The National Health Service Act, 1946, placed on the Minister of Health the responsibility for establishing a National Health Service, and since the inauguration of this service in 1948 its central administration has been the duty of the M. of H. The main administrative divs. in the M. of H. deal with (a) general practitioner services; (b) hospital services; (c) local authority health services; (d) local authority welfare services; (e) mental health services; and (f) water supplies and sewerage. The analogous Scottish dept is the Department of Health for Scotland in Edinburgh.

Health, Public, see PUBLIC HEALTH.

Health Insurance, National, see NATIONAL INSURANCE ACT, 1946.

Health Organisation, World, see WORLD HEALTH ORGANISATION.

Health Resorts, places frequented by the healthy in order to keep healthy, or by the diseased in order to regain health or to check the progress of the disease. For the healthy such resorts may be roughly divided into seaside and countryside dists. where the pure air and the generally more active outdoor life suffice to refresh mind and body. H. R. for the diseased are classified according to the conditions they are intended to cure. Consumptives frequent places at a high altitude, such as Davos Platz and Andermatt, or dists. where the climate is mild and equable, as at Bournemouth, Torquay, and the Isle of Wight in England, and the Riviera, S. Italy, Algiers, Egypt, South Africa, and South California. Many H. R. depend on the constitution of certain mineral waters, which are commonly regarded as of curative value in specific diseases. Special organisations and physicians of specialised experience probably have more to do with such cures than the actual chemical constitution of the waters. *See* BALNEOLOGY.

Health Service, National, see NATIONAL HEALTH SERVICE.

Healy, Timothy Michael (1855-1931), Irish lawyer, politician, and governor-general. He was b. at Bantry, was called to the Irish Bar in 1884, and became a Q.C. in 1899. In 1903 he was called to the Eng. Bar, and he was a Bench of Gray's Inn and of King's Inn, Dublin. He was elected M.P. for Wexford in 1880, in 1883 for Monaghan, in 1885 for S. Londonderry, in 1887 for N. Longford, in 1892 for N. Louth, and in 1910 for NE.

Cork, a seat he retained until 1918. H. supported Parnell (q.v.) until the split in the Irish Nationalist party occasioned by the O'Shea divorce case in 1890. Later he was in favour of re-union under the leadership of John Redmond (q.v.), but in 1900 he was expelled from the party for his opposition to the United Irish League. He was re-admitted in 1908, but was again expelled in 1910, in which year he formed, with Wm O'Brien (q.v.), the Independent Nationalist party. H. retired from politics in 1918. In 1922 he became the first governor-general of the Irish Free State (q.v.), a post he held for 5 years. He was a witty and humorous speaker, and extremely effective as a forensic orator. H. was the author of *Why there is an Irish Land Question*, 1881, *Loyalty plus Murder*, 1884, *A Word for Ireland*, 1886, and *Letters and Leaders of My Day*, 1928. *See* L. O'Flaherty, *Life of Tim Healy*, 1927; St J. Ervine, *Parnell*, 1928; and Sir D. P. Barton, *Tim Healy, Memories and Anecdotes*, 1933.

Heanor, urh. dist. in the Ilkeston parli. div. of Derbyshire, England, 10 m. NW. of Nottingham. It has hosiery works and large collieries, rolling stock works, and a pottery. Pop. 24,395.

Heard, Henry Fitz Gerald (1889-), Brit. author, son of a clergyman. Educ. at Sherborne and Cambridge, he became literary editor of the *Realist* in 1929. His *Science in the Making*, 1935, is an instructive study of the problems which beset a changing world and the degree of achievement of true progress. His *Science Front*, 1937, is a stimulating survey of the march of science. Other works are: *The Ascent of Humanity*, 1929, *The Social Substance of Religion*, 1931, *The Emergence of Man*, 1931, *This Surprising World*, 1932, *Exploring the Stratosphere*, 1936, *These Hurrying Years*, an historical outline of the years 1900-33, 1934, *Pain, Sex, and Time*, 1939, *The Creed of Christ*, 1941, *The Code of Christ*, 1943, and *The Doppel-gangers*, 1949.

Hearing, the result of the stimulus of the auditory neurons by impulses set up in the auditory nerves. *See* EAR.

Hearing Aids, see DEAF AND DUMB.

Hearn, Lafcadio (1850-1904), Amer. author, b. on the Ionian is. of Leucadia, from which he took his first name. Son of an Irish surgeon-major and his Gk wife, he was educ. at Ushaw College in Durham, where he lost an eye while playing games. After further schooling in France, he went to America, worked at various jobs in Cincinnati, then turned to journalism and gained a reputation as a writer with an individual style and a taste for the macabre. Among his earlier books are *Stray Leaves from Strange Literatures*, 1884, *Some Chinese Ghosts*, 1887, and *Two Years in the French West Indies*, 1890, but he is best known by his writings on Japan, to which he went in 1890. He married a Jap. girl, Setsuko Koizumi, took Jap. nationality, assumed the name of Koizumi Yakumo, and held the chair of Eng. literature at Tokyo Univ. Books in which he strove to explain Japan to

W. readers are *Glimpses of Unfamiliar Japan*, 1894, *Out of the East*, 1895, *Gleanings in Buddha Fields*, 1897, *Ghostly Japan*, 1899, *A Japanese Miscellany*, 1901, and *Japan: an Attempt at Interpretation*, 1904. See Elizabeth Bisland, *Life and Letters of Lafcadio Hearn*, 1906; and study by V. McWilliams, 1946.

Hearne, Samuel (1745-92), Eng. explorer, b. London. He entered the Hudson's Bay Company and examined parts of the coast of the Hudson Bay N. of Fort Churchill (then Fort Prince of Wales) in order to extend its trade area. In 1769 the company sent him on an expedition to discover some valuable copper mines which the Indians reported as existing and to ascertain whether there was a sea upon the N. shores of America which would connect the 2 oceans. See *Hearne's Journal*, pub. posthumously in 1795, and *Heaver*, *Outfit* 277, Mar. 1947, pp. 10-14.

Hearne, Thomas (1678-1735), antiquary, b. Littlefield Green, Berkshire. He graduated at St Edmund Hall, Oxford, in 1699, whereupon he was appointed assistant keeper of the Bodleian Library, and in 1712 became second keeper. He was obliged to resign this office in 1716 on his refusal to take the oaths of allegiance to George I, which likewise prevented him from holding other academic positions. His chief works are: *Reliquiae Bodleianae*, 1703, *A Collection of Curious Discourses upon English Antiquities*, 1720, and ed. J. Leland's *Itinerary*, 1710-12, and *Collectanea*, 1715, William Roper, *Life of More*, 1626, and an admirable collection of early Eng. chronicles, issued 1716-35. Some of his own collections saw posthumous pub. See his autobiography in the *Lives of John Leland, Thomas Hearne, and Anthony a Wood*, 1772, and *Reliquiae Hearnianae*, 1857.

Hearsay, see EVIDENCE.

Hearse (Lat. *hirper*, harrow), a carriage for conveying the dead to the grave; originally a triangular framework for holding candles at a church service, especially at funerals. In the 15th and 16th cents. H.s of great magnificence came into use, made of iron or brass, with a canopy and rich hangings, lighted by countless candles. They were erected in the churches over the bodies of distinguished persons.

Hearst, William Randolph (1863-1951), one of the greatest newspaper owners in the world, b. San Francisco, California, U.S.A. His father was George H., a California pioneer, who made a fortune in silver mines and served in the United States Senate for his state from 1886 to 1893. The son went to Harvard Univ. from 1882 to 1885, and while there became far more interested in journalism than in academic studies. He went to work on the *San Francisco Examiner*, and by 1887 had gained entire charge of it from his father, the owner. H. experimented with the paper, and reached the firm conviction that the new journalism must include great black sensational headlines, many illustrations, and comic cuts. At

this time Joseph Pulitzer and his New York *World* were the prin. exponents of the newer journalism. But H. took from the *World* staff some of its best people by offering much higher salaries. One of the famous characters in the H. comic strips was called the 'Yellow Kid.' Hence the term applied to his newspapers—Yellow Journalism. He vigorously supported Bryan for the presidency in 1896 and 1900, and Wilson in 1912 and 1916. As much as anybody, H. pushed the U.S.A. into its war with Spain in 1898. On the other hand, he vigorously opposed America's entering the First World War, and he also fought America's entering the League of Nations. He was originally a Democrat in politics, serving 2 terms as Congressman from the 11th New York Dist., 1903-7. He unsuccessfully ran for mayor of New York City on a municipal ownership ticket in 1905, and in 1906 ran for governor of New York State, being supported by the Independence League and by the Democrats. In later years he was an independent in politics, often supporting Republican candidates. He built up a vast chain of newspapers.

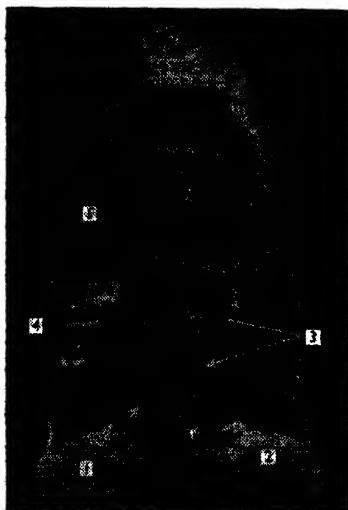
Heart. In the various animals, this is the important propulsive structure concerned in the blood circulation. In some invertebrates there is no H., e.g. Arachnida, such as *Amphioxus* (see CEPHALOCHOROLATA), while in others, such as insects, there is an elongated segmented organ, situated dorsally; in the lower orders (e.g. the Earthworm) it is merely represented by a higher development of certain blood vessels. In the vertebrates it is situated ventrally. The comparative anatomy of the H. is a complicated subject, and only a brief reference can be given here. In fishes it resembles the C-shaped form of the human embryo, and in most cases it is concerned in the propulsion of deoxygenated blood through the gills, where it becomes oxygenated. In amphibia a development of the lungs has resulted in a 3-chambered structure, having 1 ventricle and 2 auricles. In the reptiles a ventricular septum is commencing, and is almost complete in the crocodiles. In birds the organ is 4-chambered, but lacks development to the extent that the chordae tendineae (see below) are missing from the right auriculo-ventricular valve. In mammals there is, in general, a close correspondence with the human form, though in the lower orders the structure is placed less obliquely. The ossification of some of the fibro-cartilage tissue about the base of the great vessels of the H. is seen in the Ungulates, e.g. the os cordis of the ox.

The human H. is a hollow muscular organ, more or less conical in shape, situated in the thorax between the 2 lungs. It is found to be flattened in transverse section, and in its natural condition it is roughly equal in size to the closed fist of the individual, i.e. in the adult it appears to be about 5 in. long, 3½ in. in its greatest width, and 2½ in. thick, but it is subject to considerable variations in different persons, and even to variations at different

times in the same subject. The ratio of H. weight to body weight is normally about $\frac{1}{15}$ to $\frac{1}{10}$. Its capacity is 22 c.c. approximately in the new-born infant, from 150 to 180 c.c. in a youth of 16 years of age, and increases rapidly for the next 10 years, and more slowly later, reaching about 290 c.c. capacity in a male aged 60, while in the case of a female the capacity is some 25 c.c. less. The H. is enclosed in a strong membranous sac (the *pericardium*), and is situated between the breast-bone and the costal cartilages. It has a very oblique position in the chest, the base being directed upwards, backwards, and to the right, and extending from the level of the 5th to that of the 8th dorsal vertebra. The stroke of the H. is most perceptible about 3 in. from the middle line of the sternum, and about $1\frac{1}{2}$ in. below the left nipple. The organ contains a longitudinal partition, dividing it into a right and a left half; transverse constrictions further sub-divide its interior into 4 chambers, viz., the right and left auricles and the right and left ventricles. The exterior is marked by a deep transverse groove, the auriculo-ventricular furrow, and by 2 longitudinal furrows, roughly corresponding to the internal septum and constrictions. In the furrows will be found the *coronary* arteries and veins which are concerned with the blood supply of the H.'s component structures. Lymphatic vessels and nerves embedded in fatty tissue and covered by a layer of the pericardium also occur. This pericardium is a membranous mantle of 2 layers which enclose the pericardial cavity. The outer and inner layers present smooth serous surfaces to one another and secrete a pericardial fluid which acts as a lubricant.

Cavities.—The auricles (so named from a faucied resemblance to an ear, Lat. *auris*), which are situated at the broad upper base of the H., are thin-walled cavities acting as reservoirs for the blood. The posterior part of the right auricle receives the venae cavae, the superior being above and the inferior below, and the remains of the Kustachian valve, a relic of foetal circulation, will be found attached to the right and lower margin of the orifice of the inferior vena cava. The right auricular appendage overlaps the root of the aorta, and lies in front of the superior vena cava. The tricuspid valve separates the right auricle from the right ventricle, this pyramidal chamber has much stouter walls than its corresponding auricle. The pulmonary artery is in communication with the right ventricle; though a valve in the form of 3 watch pockets, or cusps, closes the opening into this artery at certain stages of the *cardiac cycle*. Each cusp of the valve has a small knob (*Corpus Arantii*) in the middle of its curved edge, and the 3 flaps fit back into corresponding niches in the arterial tube. These hollows (*Sinuses of Valsalva*) ensure that, when the valve is fully relaxed, the blood shall have an uninterrupted passage into the efferent vessel. The left auricle receives the blood from the *pulmonary*

vein; it passes thence into the left ventricle, which in this direction is unobstructed by the *mitral valve* (so called from its resemblance to the bishop's cap of that name). The left ventricle is the stoutest walled of the 4 chambers, as its contractile force must propel the blood throughout the whole of the body.



F. Whitman Jones

THE HEART AND CIRCULATION OF BLOOD IN A FISH (THE DOGFISH)

1, the auricle, which receives deoxygenated blood from the body, 2, the ventricle, which pumps the blood through the ventral aorta (4), and the afferent branchial arteries (3) to the gills (5). In the gills the blood is reoxygenated and circulates round the body again.

Cardiac cycle and the circulation.—This cycle of activity comprises (a) the simultaneous contraction of the auricles, followed by (b) a simultaneous contraction of the ventricles. The former occupies about one-third of the time of the latter, and the 2 contractions are termed *systole* of the H. They are followed by a pause, *diastole*, which occupies a period of time roughly equal to that of the complete *systole*. The whole cycle is repeated about 75 times per min. During the contraction of the auricles the mass of blood contained in the large veins prevents regurgitation, and the total contents pass into the uncontracted ventricles. The valves, which have been slowly closing during the filling of the lower chambers, are completely closed on the commencement of the ventricular *systole*. The

valve sections are semi-lunar in shape, and are composed of endothelium, strengthened by enclosed fibrous tissue; the 2 cusps of the mitral valve are unequal in size. Fleshy columns (muscular papillares) support strong tendinous cords (chordae tendineae), which are attached to the under surface of the valve flaps and prevent these being forced into the interior of the auricle during the ventricular systole. From the left ventricle the bright red, oxygenated blood from the pulmonary vein is forced into the *aorta* with its 3-cusped valve resembling that of the pulmonary artery. It is estimated that each ventricle propels forward 5½ cub. in. of blood during each systole, and that the total 'work' of the H. in 24 hrs is equivalent to 120 ft. tons. The focal circulation is different from that described, inasmuch as there is direct communication between the 2 auricles by means of a large opening (*foramen ovale*) in the inter-auricular septum; the cycle in this case is: right auricle, left auricle, left ventricle to maternal placenta, and so on.

Sounds.—H. complaints are frequently diagnosed by auscultation, or the listening to the H.'s sounds by means of a suitably applied stethoscope. These sounds in a healthy adult will consist of a longish dull sound followed by a short sharp sound, and resemble *loob-lub, loob-lub*, and so on. The former is probably caused by the contraction of the muscular fibres of the ventricle and the tension of the auriculo-ventricular valves, the latter is due to the sudden closure of the semilunar valves on the completion of the ventricular systole. H. disease may be detected by irregularities in these sounds.

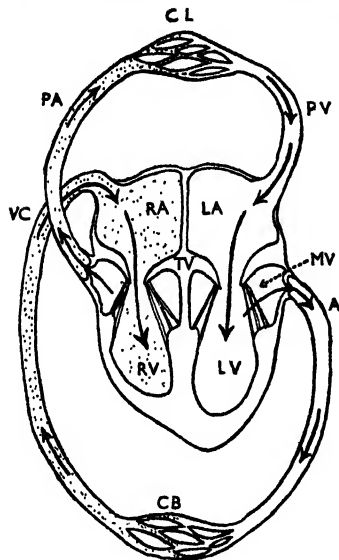
Detailed structure.—The main substance of the organ is composed of muscular tissue (*myocardium*), with a certain amount of interstitial areolar tissue containing numerous blood vessels and lymphatics, together with nerves and ganglia in certain areas. At the base of the H., beneath the pericardium, there is usually a considerable amount of fat. Fibrous tissue and fibrous cartilage occur at the large orifices at the base of the ventricles. A previous reference has been made to the ossification of this in certain animals. The inner surfaces of the H. cavities are lined by a smooth membrane termed the *endocardium*. The muscles are involuntary, but differ from the usual form of these in being striped. The exact arrangement of the fibres is very complicated, and is little understood (reference should be made to recent treatises, as Cunningham's *Anatomy*); but, in summary, there appear to be common superficial fibres for the 2 auricles and the 2 ventricles, and separate deeper fibres for each cavity. Fibre bundles (bundles of His) connect auricle to ventricle, the function of which is to transmit the impulse of contraction from the auricle to the ventricle; if these bundles are damaged, the ventricle contracts very slowly, at its own natural rate, and the condition is spoken of as 'heart block' (see Stokes' Adams' disease, below).

Nervous system.—The nervous control of the organ is tripartite, and consists of cardiac nerves derived from the cervical ganglia of the sympathetic system, from ganglia in its own substance, and also from the pneumogastric or vagus direct from the brain; this last system apparently exercises an arresting power on the H.'s action, whilst the sympathetic nerves have the opposite effect, of speeding up the rate of beat.

Diseases.—The H. or its investing membranes may be the seat of many different forms of disease.

Pericarditis is the inflammation of the pericardium, and is usually accompanied by an excessive effusion of fluid into the pericardial cavity; this may seriously affect the mechanical action of the H. Endocarditis, or the inflammation of the lining membranes of the H.'s cavities, may be caused by rheumatic fever (q.v.), and may result in serious injury to the valves, usually those of the left side. Valvular damage usually causes *murmurs*, and these sounds are tested by auscultation, and in this manner a narrowing of the valve orifice (*stenosis*) can be distinguished from an incompetence of the valves. An acute ulcerative endocarditis is due to micro-organisms, and until the discovery of the antibiotics was invariably fatal. Myocarditis, or inflammation of the muscle substance, may take one or more of sev. forms, and result in serious permanent trouble, e.g. fatty degeneration. The coronary arteries thicken and narrow with advancing years so that the blood supply to the H. muscle is reduced, and from lack of sufficient nourishment the muscle becomes weaker. A clot or thrombosis in a coronary vessel (coronary thrombosis) completely obstructs the blood flow in the vessel, with the result that that part of the heart muscle supplied by it is entirely deprived of nourishment. In severe cases death ensues. Palpitation, which may be due to digestive troubles and is then caused by direct impulses from the stomach, must not be confounded with *tachycardia* in which the H.'s action is permanently accelerated as during exophthalmic goitre. Bradycardia, or the slowing of the rhythm, may be due to cerebral tumour, melancholia, jaundice, etc., in the form of Stokes' Adams' Disease, or a senile degenerative change appearing to lead to a weakening of the conductivity of the common deep-seated auriculo-ventricular muscle bundles. Congenital malformations of the H. are not unknown, e.g. the *foramen ovale*. Instead of closing up as normally occurs at birth, may remain open, so that purplish deoxygenated blood leaks from the right side of the H. to the left, whence it is pumped round the body; a sign of this complaint is cyanosis (blueness) of the face, especially on exertion. The treatment of diseases of the H. consists, so far as is possible, in removing the cause. H. failure, i.e. when the 'pump' is failing to maintain the circulation in a regular, even flow, must at all times be treated with rest so as to reduce to a minimum

the demands made upon the organ. Digitalis is an invaluable drug in the treatment of a certain kind of cardiac irregularity known as auricular fibrillation. The most spectacular advance in the treatment of valvular defects of the H. has been contributed by surgery (q.v.). Blalock in America, and Brock, Sellors, Bryce, Allison, and others in Great Britain have been the pioneers in operations for congenital malformation (as in the 'blue baby') and for correcting the mechanical defects resulting from valvular disease



THE HEART AND DOUBLE CIRCUIT OF BLOOD
Deoxygenated blood is shown dotted

RA, right auricle; RV, right ventricle; LA, left auricle; LV, left ventricle; TV, tricuspid valve; VC, vena cava; PA, pulmonary arteries; CL, capillaries in lungs; PV, pulmonary veins; MV, mitral valve; A, aorta; CB, capillaries in body.

caused by rheumatic infection. Surgery within the H. is limited by the length of time that the circulation may be stopped. A 'heart-lung' machine, which will artificially oxygenate and circulate the patient's blood while the H. is stopped, is being experimented with. If it is perfected, and there is every indication that it will be, this machine will revolutionise the surgery of the H. and circulatory system. The contraction of the H. muscles (as also of other muscles in the body) is accompanied by electrical impulses which can be amplified and rendered visible on a screen by means of

the *electrocardiograph*. A photograph (*electrocardiogram*) of these impulses is valuable for the diagnoses of H. diseases. See also ANGINA PECTORIS.

Heart Burial, the burial of the heart in a separate place from the body. It was practised by the ancients Egyptians, and was known in Europe during the 12th and 13th cents. The custom probably arose out of a veneration for the heart, which was regarded as the seat of a man's affections and conscience and was associated with his soul. It was forbidden by Boniface VIII (1294-1303), but his prohibition was withdrawn by Benedict XI. The heart of Richard I was buried in Rouen Cathedral, and that of Edward I at Jerusalem. Other notable instances of H. B. may be cited in the cases of Henry III in Normandy, James II in Paris, Robert Bruce at Melrose Abbey, the Fr. kings, Louis IX, XIII, and XIV, Francis I and II, Philip III, etc., and the Emperor Leopold of Austria. Shelley's heart, *cor cordium*, was sent home to Bournemouth, and Byron's was buried in the mausoleum at Missolonghi in Greece. Separate burial was sometimes given to other parts of the body. The viscera of the popes have been buried in the church of the Quirinal since the time of Sixtus V (1590). See T. J. Pettigrew, *Chronicles of the Tombs*, 1857; and Emily Hartshorne, *Enshrined Hearts of Warriors and Illustrious People*, 1861.

Heart-lung Machine, see MEDICAL RESEARCH; HEART.

Heart of Midlothian, old Tolbooth or gaol of Edinburgh, cap. of Scotland. It gives its name to one of Scott's novels. It was pulled down in 1817.

Heartburn, the common name for a burning sensation in the chest, often accompanied by a feeling of discomfort in the throat and in the region of the heart. It is due to gastric disturbances, and is generally caused by irritation of the stomach wall by hyper-acidity of the gastric contents. The cardiac symptoms, when present, are generally due to an over-distended stomach interfering with the heart's action.

Heart's Content, seaport and tn of Newfoundland, situated on the Avalon Peninsula, 40 m. NW. of St John's, on the E. coast of Trinity Bay. It is the site of the landing of the first transatlantic cable and the terminus of 3 Atlantic cables from Valentia Is., Ireland. Pop. about 600.

Heart's-ease, see PANSY.

Hearts of Oak Benefit Society, estab. 1842, its objects being the provision of sickness benefit; maternity benefit; convalescent home benefit; relief in distress; payments at death of members; whole life and endowment assurance; children's endowments; annuities; group insurance; also sickness insurance table providing for share of surplus to be credited to member's account. An additional section of the society provides benefits for self-employed persons. The number of membership accounts is 539,841; the society's offices are in Euston Road, London.

(4) change of temp.; (5) electrical and chemical effects. Each of these will be considered in turn:

(1) *Change of dimensions.*—Most bodies expand or increase in vol. on being heated. In laying down the rails of a railway, an interval is left between consecutive rails to allow for this. The expansion due to rise of temp. must be taken into account in building steel bridges and in setting up pipes which are to carry hot water. The pendulums of clocks and the balance wheels of watches have to be 'compensated,' so that the time of swing, which

cent of nickel, has an extremely small coefficient of expansion, and it is often used in pendulum clocks, since no compensating device is required when the rod and bob are made of it.

The coefficient of expansion of liquids is, as a rule, much greater than that of solids, while the coefficient of expansion of gases at constant pressure is very much greater than that of solids or liquids; further, it is independent of the nature of the gas, i.e. oxygen expands to the same extent as an equal vol. of hydrogen, air, or any other gas for a given rise of temp. under the same conditions of pressure.

(2) *Change of internal stress.*—Many of these changes in vol. are accompanied by changes in the internal forces or stresses between the molecules of the body. As

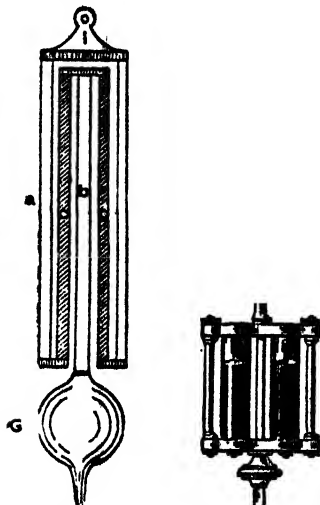


FIG. 3
COMPENSATING PENDULUM

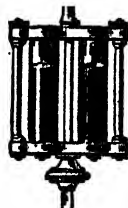


FIG. 4

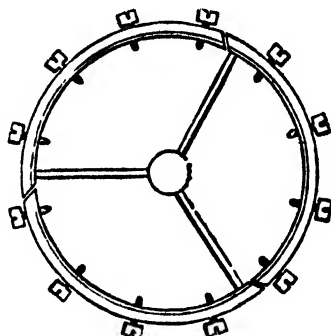


FIG. 5. BALANCE WHEEL OF WATCH

a wheel tyre contracts it is subject to enormous internal stresses. If air or any other gas is confined in a closed vessel and its temp. is raised, the pressure exerted by the gas is increased and may burst the vessel. The tyres of a motor-car can be caused to burst in this way in summer.

(3) *Change of state.*—There are 3 states of matter, viz. solid, liquid, and gaseous states, and, as Black discovered in 1756, the change from one state to another is accompanied by the evolution or absorption of H. Because a thermometer shows no change of temp. while a change of state is taking place, Black referred to this H. as *Latent Heat*. For example, 80 calories of H. are required to change 1 gm. of ice into 1 gm. of water at 0° C.

(4) *Change of temperature.*—If a quantity of water be heated, we can tell by our sense of H. that it is becoming hotter; and in scientific language we say that its temp. is rising. The change of temp. can be measured by means of a thermometer (q.v.).

In Fig. 4 the downward expansion of the rod is compensated by the upward expansion of the mercury. In Fig. 5 the rim of the wheel is made up of 3 segments, each of which consists of 2 metals securely fastened together, the more expansible being on the outside. When the temp. rises, the spokes increase in length, but this is compensated by the bending inwards of each of the segments of the rim. An alloy known as *invar*, which consists of 64 per cent of steel and 36 per

(5) *Chemical and electrical effects.*—Chem. changes commonly accompany the heating of a body. Thus when coal is heated in air, it combines with the oxygen of the air and burns; this process,

once started, produces sufficient H. for its continuance. The electrical effects of H. are of 3 kinds: (a) That produced when a circuit is made up of wires of different materials, say copper and iron joined together at each end, and the temp. of the 2 junctions is different; then a small electric current flows round the circuit. This effect is known as the thermoelectric effect (see ELECTRICITY—*Thermoelectricity*), and was discovered by Seebeck in 1821. Since a very small electric current can be measured easily, this effect of H. is used in many temp. measuring instruments. (b) The change produced in the electrical resistance of bodies by H. This has been made the basis of a method of measuring temps. by means of the platinum-resistance thermometer (q.v.). (c) When a metal is heated to sufficiently high temps. it emits electrons. The process is known as Thermionic Emission and is the principle underlying the action of radio valves and many other electronic devices.

MODES OF TRANSFERENCE OF HEAT.—There are 3 modes of transference: (1) Convection, (2) Conduction, and (3) Radiation. (1) In convection H. is carried or conveyed by the motion of heated masses of matter. The most familiar instances of this method of transference of H. are the heating of buildings by the circulation of hot water (see HEATING and VENTILATION), or the equalisation of temp. that is produced by the movement of the hot water in a mass of water heated from below (as in the case of a kettle). Convection can only take place in fluids, and the process constituting convection takes place as follows. The fluid is heated and expands so that it becomes less dense than the colder surrounding fluid. It is therefore pushed upward by the denser fluid, and it takes its H. with it. Convection plays an all-important part in ventilation.

(2) In conduction, H. is transferred without visible relative motion of the parts of the body. Familiar examples of this are the transference of H. from one end of a poker placed in a fire to the other end, and the transference of H. from one end of a silver spoon, placed in hot tea or coffee, to the other end. Conduction always takes place from the hotter to the colder parts of a conductor. Most metals are good conductors of H., while most non-metallic substances, liquids (excluding mercury), and gases are poor conductors of H.

(3) 'Ordinary' light and radiant H. both travel with the same velocity of over 186,000 m. per sec. in *vacuo*, and we receive all our H. from the sun by means of radiation that travels across empty space incapable of conducting or conveying H. to us by the other modes referred to above.

In most cases H. is transferred by all 3 methods simultaneously. It is interesting to notice that the thermos flask (q.v.) designed by Dewar attempts to prevent the transference of H. to or from the enclosed liquid. It consists of a double-

walled vessel of glass (a bad conductor of H.), whose inner faces are silvered to reflect radiant H., and the space between the walls is evacuated to prevent transference of H. by conduction or convection.

The chief sources of H. are: (1) the sun; (2) chem. action, as in the burning of coal, wood, etc.; (3) mechanical action, e.g. friction; (4) electrical energy, e.g. heaters and lamps; (5) change of state, e.g. from solid to liquid; (6) nuclear reactions.

See also ATOM and ATOMIC THEORY; ATOMIC BOMB; EVAPORATION; FIRE; FLAME; PHYSICAL CONSTANTS; PYROMETER; RADIATION; TEMPERATURE; THERMODYNAMICS; THERMOMETER; ZETA.

Bibliography.—T. Preston, *Theory of Heat*, 1929; H. S. Allen and R. S. Maxwell, *Textbook of Heat*, 1939; E. A. Guggenheim, *Thermodynamics*, 1950; J. K. Roberts and A. R. Miller, *Heat and Thermodynamics*, 1951; M. W. Zemansky, *Heat and Thermodynamics*, 1951; M. Nelkon, *Heat*, 1953.

Heat of Formation of a compound is the amount of heat, measured in calories, which is evolved or absorbed when the molecular weight in grams of the compound is formed from its elements. Thus when 2 grams of hydrogen combine with 16 grams of oxygen to form 18 grams of water, 68,370 calories are evolved and this amount is the H. of F. of water. In cases where the H. of F. cannot be determined directly, use is made of Hess's law (q.v.). *Heat of neutralisation* is the heat change taking place when gram equivalents of acids and bases neutralise each other in very dilute solutions. *Heat of solution* is the heat change taking place when the gram molecular weight of a substance is dissolved in a very large quantity of water, usually represented as Aq. See THERMOCHEMISTRY.

Heat-stroke, see SUNSTROKE.

Heaters, Electric, see ELECTRICITY IN THE HOME, *Electric Heaters*; HEATING, *Electrical Heating*.

Heath, William (1737–1814), b. Roxbury, Massachusetts, started life as a farmer. In 1765 he joined the Anct and Honorable Artillery Company, and 5 years later became its commander. In 1775 he became brig.-gen. in the prov. army, and took part in the fighting with the Brit. troops at Bunker Hill, where he gained the rank of maj.-gen. He was defeated in his attempt to take Fort Independence from the Brit. When Benedict Arnold sought to betray his countrymen and then fled to the Brit. lines, H. took charge of the troops at West Point, New York. When Gen. Washington went S. to fight the troops under Lord Cornwallis, he placed the sturdy H. in charge of the soldiers on the Hudson R., who faced Gen. Clinton. After the Amer. colonies had won their independence, H. retired to his farm. However, he took some part in Massachusetts state politics, being a State Senator in 1791–2. He d. at Roxbury, 24 Jan.

Heath, see ERICA.

Heathcock, see BLACKCOCK.

Heather, see CALLUNA VULGARIS.

Heathfield, George Augustus Elliott, Baron (1717-90), gen., a younger son of Sir Gilbert Elliott, 6. Stobbs, Roxburghshire. After having been educ. at Leyden Univ. and at Woolwich, he was a volunteer in the Prussian Army in 1735-6. He served in the war of Austrian Succession at Dettingen and Fontenoy, and in the West Indies in the Seven Years War. In 1775, at the outbreak of the Amer. war, he was sent out as governor to Gibraltar. His heroic defence of that fortress against Spain, from June 1779 to Feb. 1783, is one of the finest achievements in Brit. hist. On his return to England in 1787 he was created Baron H. of Gibraltar.

Heating. The temp. of a human being in good health is 98.4° F. When the external temp. rises, that of the body is regulated by perspiration while a low external temp. may be counteracted by increased bodily exercise. In civilised life, however, man requires some form of H. apparatus in addition to clothes and houses. In devising such apparatus the engineer's terms of reference include the consideration of economy and efficiency, ventilation and atmospheric humidity. Heat is lost from a building by conduction through the roof, walls, and especially through windows, and by the leakage of warm air and the consequent entrance of cold air for purposes of ventilation. It is the architect's business to make a study of the losses of heat in this way when designing large buildings before computing the necessary supply of heat. Prevention of heat loss by use of insulating materials has been developed in recent years. Loss of heat through the roof can be prevented by placing a 'blanket' of glass wool, mineral wool, or aluminium foil over the ceiling immediately beneath the roof. Alternatively the spaces between joists can be filled with a loose felt of similar material.

All systems of H. depend either upon convection or radiation (see HEAT) or upon a combination of both. The most common and obvious method of H. is, of course, by radiation, and is exemplified by the open fire. By this means the walls and furniture and occupants of a room are heated and the air left cool. Heat is radiated not only from the fire itself but from the back of the grate and from the sides. The effective radiating surface of an open fire is increased by making the sides of a grate inclined at an angle of at least 120 degrees to the back, and the back is made to hang forward over the fire. Further the grate should be bounded on both sides by firebrick and the overhanging part should be made of the same material. In recent years the design of the open fire grate has been improved. Accurate draught control and careful fitting ensure more economical use of fuel and continuous day-and-night burning grates are now in common use.

Central Heating.—Methods of central heating for long use in colder climates, are rapidly spreading in England from use in large buildings, offices, big houses, etc., to a much more general popularity in new

small houses. For this, a hot water system is generally used. The water is heated in the basement and circulates by means of convection through pipes and radiators distributed throughout the building. The water rises through large pipes to an open tank at the top of the system which allows for the expansion of the water and by means of which the pipes and boiler are kept full. The cooled water returns via a vertical pipe to the boiler where it is heated again. Air cocks are placed at the tops of the radiators so that any accumulated air which impedes circulation may escape.

There is also a single-pipe system of central H. in which the hot water is taken from a single main pipe to each radiator and the return is made to a point farther along the pipe. In this system radiators far removed from the main pipe are supplied with cooler water than those nearer to it and for this reason distant radiators are made larger. The temp. of the water leaving the boiler in most systems is about 180° F. In large buildings the circulation of the water by convection is too sluggish and is further opposed by friction between the water and the pipes. In this event a pump is installed to force the water round the system.

Ventilation must be attended to wherever central H. is adopted, for the radiators heat the air in the room and the heat is thus distributed by convection currents of air as well as by radiation (to a small extent). The air is not naturally renewed, however, and in large buildings systems of ventilation are often installed. In small rooms the disadvantage can be remedied by placing the radiators beneath open windows. The hot air rising from the radiator then carries along with it a supply of fresh air as it rushes past the window and conveniently warms up the cold air before it is distributed in the room. The hot-water system is not suitable for tall buildings and a steam-H. system is necessary in such cases. The most widely used (especially in America) system of the latter class is the *Vacuum system*. Steam is generated in a boiler and passes thence by means of a steam supply pipe to radiators installed in the various rooms. The steam passes in at the top of the radiator via an inlet valve and condensing in the radiator it gives up its latent heat to it. Air and condensed steam pass through a thermostatic trap (designed to prevent the passage of steam) into a return pipe, where it is drawn back to the boiler by means of a vacuum pump. In this way rapid circulation is maintained. Central H. systems in America are frequently arranged with one central boiler supplying a whole dist. (see below).

District heating.—There may be sev. advantages in distributing heat over a neighbourhood or even a whole town from one central plant. One large plant may be run more efficiently than sev. small ones. Many factories and power stations produce waste heat, usually in water from cooling plant; this may be at a temp. too low for economic recovery, but high

enough for space H. and other domestic uses. The difficulties lie in overcoming heat loss in transmission over a long distance through pipes, and in methods of metering consumption by the user. Installation costs are high, especially where the area is already built up; the most favourable situation is when a new town is being planned and all the work needed below ground can be completed before roads and buildings are commenced. It is mainly in America and on the Continent that the system has so far been used with success. There are only a few such systems working in Great Britain, including that at Pimlico, London, where blocks of flats on the N. bank of the Thames are supplied with heat from Battersea power station on the S. bank, through ducts running under the river.

Electrical Heating.—The greater proportion of electricity used at the present time is generated from the combustion of coal, though a small proportion is generated by water power. The use of atomic power for generating electricity has been developed with amazing rapidity. As more stations are built it will gradually supersede other methods of production. Methods of H. by electricity include that of radiant fires of varying types, convector heaters, and sealed oil-filled radiators which supply excellent background H.

Other modern developments include under-floor H. (see PANEL HEATING) and the use of the heat pump.

Oil Heating.—Modern oil convector heaters supply good background heating at a comparatively low cost. Oil-fired central-H. boilers are being increasingly used.

For H. by hot air, see AIR CONDITIONING, since this concerns the H. of air before it is brought into a room. See also BOILERS; ELECTRIC HEATING; ELECTRICITY IN THE HOME; FURNACES; FUELS; GAS SPACE HEATERS; and GAS WATER HEATERS. See H. G. Solomon, *Domestic Electric Heating*, 1927; A. A. Jones (editor), *Modern Heating and Ventilation*, 1935; E. C. Stanford, *Central Heating and Hot Water Supply for Private Houses*, 1938; L. J. Overton, *Domestic Hot Water Supplies and Central Heating by Hot Water*, 1938, and *Central Heating* 1949; G. Nash, J. Comrie and H. Broughton, *Thermal Insulation of Buildings*, 1955.

Heaton Norris, see STOCKPORT.

Heaven, in popular use that part of space which we ourselves can see. So commonly among the Jews. In the O.T. the term denotes the region sometimes of the clouds, sometimes of the stars. In medieval scholastic philosophy (e.g. *Summa Theologiae* of St Thomas Aquinas) these 2 together are the 'firmament'; but it has been suggested that for the Jews they were the first and second H.s, while the abode of God and the saints (H. in the theological sense) was the third H. So St Paul refers to the 'third heaven' in 2 Cor. xii. 2. Other classifications are found in Jewish and Lat. theology. That

of the Cabbala, representing the later Rabbinic conceptions, gives 7 H.s of which the highest is the abode of God, the lowest the region of the stars. This has passed into Mohammedan theology. The conception of H. as the abode of God, where God makes a special manifestation of Himself, runs all through the Biblical and Patristic writings. Lastly, H. is often spoken of as a state, the condition of those who share the life of Christ. Eph. i. 6 and Phil. iii. 20 declare that even now the life and conversation of Christians are 'in heaven' and 'in heavenly places.' But they enjoy H. imperfectly, under earthly conditions. The essential and constituent joy of H. is the Beatific Vision of God.

Heaves, or **Broken Wind**, see HORSE (DISEASES).

Heaviside, Oliver (1850–1925), scientist who carried out important practical and theoretical electrical research; b. in London. For a few years, ending 1874, he was employed by the Great Northern Telegraph Co., but he retired because of deafness. Afterwards he lived in Devonshire, working on electromagnetic theory. He made fundamental discoveries in telephonic transmission, but is most commonly remembered for his suggestion that an upper layer of the air (the 'Heaviside layer') has conducting powers that serve to confine electro-magnetic waves to the neighbourhood of the surface of the earth. His 'operational calculus' which he developed in his *Electromagnetic Theory*, 1893–1922, has proved a powerful tool in modern electrical engineering problems.

Heavitree, par. in the E. dist. of Exeter, within the boundaries of the city.

Heavy Spar, see BARYTES.

Heavy Water, water in which the hydrogen is replaced by deuterium, the heavy isotope of hydrogen with an atomic weight of 2. Formula D₂O. It is contained in ordinary water to the extent of about 1 part in 5000 and may be obtained by the fractional electrolysis of water, D₂O being electrolysed more slowly than H₂O. In atomic science D₂O is used to slow down fast-moving neutrons. See ZETA.

Hebbel, Christian Friedrich (1813–63), Ger. poet and dramatist, b. in humble circumstances at Wesselburen in Dithmarschen, Schleswig-Holstein. After travelling on the Continent, he settled in Vienna (1846), where he d. His childhood of poverty left a lasting impression on him, and most of his works are gloomy and depressingly realistic. His first tragedy, *Judith*, was performed at Hamburg in 1841, and made his reputation. His tragedies are very powerful, and show a fine sense of dramatic situation; but they depict for the most part the passionate struggles of hot and ugly natures, and his scenes are unrelieved by humour or by loveliness. He is nevertheless one of the greatest Ger. dramatists. His chief works are: *Maria Magdalena*, 1844, *Julia*, 1851, *Gyges und sein Ring*, 1856, and *Die Nibelungen*, 1862. His lyric poems are included in *Gedichte*, 1841–8, and *Mutter*

und Kind, 1859. See R. M. Werner's critical ed. of his works, 1901-3, and E. A. Georgy, *Die Tragödien Hebbels nach ihrem Gedankengehalt*, 1922; E. Purdie, *F. Hebbel*, 1932; C. Augustin, *Hebbel als Denker*, 1947.

Hebburn, tn of Durham, England, situated on the S. bank of the Tyne, in the Jarrow div., 4 m. N.E. of Gateshead. There are chem., electrical, and engineering works, and lead smelting works. Shipbuilding is also carried on. Pop. 24,000.

Hebden Bridge, tn of the W. Riding of Yorks, England, on the R. Calder, in the Sowerby parl. div., 8 m. W. by N. of Halifax by rail. The tn has cotton factories, dye-works, and foundries. The chief industry is the manuf. of ready-made clothing. Pop. 10,000.

Hebdomadal Council, governing body of the univ. of Oxford. It was evolved, in 1854, out of the Hebdomadal Board, instituted in 1631 by Charles I, probably at the suggestion of Archbishop Laud. It consists of the chancellor, vice-chancellor, late vice-chancellor, 2 proctors, *ex officio*, and 6 heads of houses, 6 profs., and 6 members of convocation, elected by congregation. The council holds its meetings weekly during term and takes the initiative in all univ. legislation.

Hebe, Gk goddess of youth, daughter of Zeus and Hera, and cup-bearer of the gods before the rape of Ganymede (q.v.). She married the deified Heracles, with whom she was worshipped at Athens. She was worshipped as Juventas on the Capitoline Hill at Rome. She had the power of restoring the aged to youth. A statue of H. is the masterpiece of Canova.

Hebel, Johann Peter (1760-1826), Ger. poet, b. Basel. He studied theology at Erlangen (1778-80), subsequently teaching at the Gymnasium at Karlsruhe. He wrote his poems in 'Alemanno' dialect; his *Allemanntische Gedichte* were trans. by Reinick into High German in 1891. His work was fresh, humorous, and full of vigour, and attained great popularity. The *Schatzkästlein des rheinischen Hausfreundes*, 1811, contains first-rate stories. The first complete ed. of his works was pub. in 1833-4 and further eds. by W. Zentner, 1929, and W. Altwegg, 1942. See lives by G. Längin, 1894; W. Altwegg, 1935; S. Lüder, 1944.

Heber, Reginald (1783-1826), bishop, b. Malpas, Cheshire. After graduating at Brasenose College, Oxford, he entered holy orders (1807), and accepted a living at Hodnet, Shropshire. He was appointed Bampton lecturer, 1815; preacher of Lincoln's Inn, 1822; and bishop of Calcutta, 1828. He is chiefly remembered by the hymns he wrote, the best known being 'From Greenland's Icy Mountains,' 'The Son of God goes forth to War,' and 'Brightest and best of the Sons of the Morning.' Besides his *Hymns*, new ed. 1878, his pubs. include: *A Journey through India*, 1828, and *Palestine: a Poem*, 1808. See lives by his widow, 1838, and G. Smith, 1895.

Heberden, William (1710-1801), phys-

ician, b. London; educ. London and Cambridge Univ. where he graduated in 1728; he then studied medicine and was M.D., 1739. For some years he practised at Cambridge, where he acquired the reputation of a good classical scholar. He pub. *Antithriaxia: an Essay on Mithridatium and Theriaca* in 1745; his criticism of these 2 substances led to their removal from the pharmacopoeia. H. moved to London in 1748 and practised there for over 31 years, becoming one of the most eminent physicians of his day. Samuel Johnson called him 'the last of our learned physicians.' Besides *Antithriaxia*, he gave the first account of angina pectoris (1768), described the nodes seen on the fingers in rheumatism ('Heberden's nodes'), was first definitely to differentiate chickenpox and smallpox (1768), and gave a classical account of night blindness. These papers were republished in his *Commentarii de Morborum Historia et Curatione*, 1802 (Eng. trans., 1803), which includes a memoir by his son. See also life by A. C. Buller, 1879.

Hébert, Jacques René (1757-94), Fr. revolutionary, known as 'Père Duchesne,' b. Alençon, and went to Paris as a servant. At the outbreak of the Revolution he soon became one of the extremist leaders, propagating his views in *Le Père Duchesne* (which he ed., 1790-4), and in various pamphlets, such as *La Lanterne magique*, 1790. He joined the Club of the Cordeliers (1791), became a member of the Commune (1792). He took part in the Sept. massacres and sat on the commission which judged Marie Antoinette. He inaugurated the 'Worship of Reason,' the followers of which were called Hébertists or *Enragés*, but was arrested by his rival Robespierre, and guillotined.

Hebrew Language, Writing, and Literature. This language, in which almost the whole of the O.T. (see BIBLE) was written, is a branch of the Semitic linguistic group (see SEMITIC-HAMITIC LANGUAGES), so called (since 1781) from the name of Shem, the first-born of the sons of Noah (Gen. x). The Hebrews, or Israelites, and the Aramaeans (q.v.) are regarded as belonging to the so-called Third Semitic Immigration, which during the 2nd millennium BC occupied Palestine, Syria, and N. Mesopotamia. The Semitic languages lend themselves to the following div.: (1) the NW. group, consisting of 2 main branches, Canaanite (including Hebrew, Phoenician, Moabite, and allied languages) and Aramaic (and allied dialects); (2) the E. or Accadian group (including Assyrian and Babylonian); and (3) the S. group (including Arabic and Ethiopic). All these languages possess certain features in common, obscured, however, to some extent by the particular developments of each. The chief of these Semitic peculiarities are: (1) stems mainly based on 3 consonants; therefore (2) the scripts generally consist of consonants only, the cuneiform (q.v.) writing forming an exception; (3) verbs having 2 tenses only, and nouns only 2 genders; (4) identity of roots for verbs and nouns of

kindred meaning; (5) direction of writing (except in Cuneiform) generally from right to left.

The origin of the word 'Hebrew,' or 'Ibri' in Hebrew, is uncertain; the traditional explanation as 'of the other side' (of the River) is rejected by many scholars. The Heb. language is called in the Bible 'the language of Canaan' (Is. xix. 18) or 'the Jews' language' (Is. xxxvi. 11 and 13). Until 30 years ago there were but few monuments and other written documents in Hebrew outside the O.T. Nowadays we can list some hundreds of Early Heb. inscriptions belonging to the 1st millennium B.C. Disregarding a fragmentary inscription of 3 letters from Lachish, which may belong to the 12th cent. B.C., the earliest Heb. inscription is a small stone tablet known as the Calendar of Gezer, with a catalogue of farming operations arranged by months. It can be assigned to c. 1000 B.C., i.e. to the period of Saul or David. The important Moabite stele of King Mesha, belonging to the middle of the 9th cent. B.C., is written in Moabitic, a dialect almost identical with Hebrew. About 80 ostraca, or inscribed potsherds, found at Samaria belong to the 9th or 8th cent. B.C. They are invoices of oil and wine, and are written in a beautiful cursive; they provide us with examples of the dialect and cursive script of the N. Kingdom of Israel. The most important epigraphic monument from Judaea is the Siloam inscription, assigned to c. 700 B.C. The Early Heb. cursive writing reaches its peak in the now famous collection of 21 letters and other documents from Lachish (in S. Palestine), written in ink in a bold script in perfect Biblical Hebrew. A considerable number, about 150, of inscribed stone seals have also been discovered in Palestine, and they attest the diffusion of writing among the Hebrews in the pre-exilic period (first half of the 1st millennium B.C.). Stamps impressed on jar-handles, inscribed weights and measures, marks on pottery and masonry, and other miscellaneous documents all have a certain value from the palaeographical as well as from the linguistic and historical points of view. All these inscriptions are written in the Early Heb. alphabet, which, together with the Phoenician, belongs to the Canaanite branch of alphabets (see ALPHABET). Both the writing on Jewish coins from the Maccabean age to Bar Kochba's revolt (135 B.C. to A.D. 132-5) and the beautiful, neat, and symmetrical Samaritan alphabet, still in use for liturgical purposes, are direct derivatives of the Early Heb. script. On the other hand, the modern Heb. alphabet (see fig. on p. 262 of Vol. I), in all its monumental, book-hand, and cursive forms, is not a descendant of the Early Heb. alphabet, but of the 'Square Hebrew' alphabet, which was a derivative of the Aramaic alphabet and can be traced from the 2nd and 1st cents. B.C.

The period of literary Hebrew covers at least 8 cents., from about 1000 B.C. to the 2nd cent. B.C., but its most flourishing

period lasted from the 10th to the 5th cents. B.C. After the return from the Exile, Hebrew was gradually supplanted by Aramaic, but it is erroneous to think, as some scholars do, that it died out. Actually it continued to be employed in 'national' circles. However, considerable portions of the biblical books of Daniel and Ezra are written in Aramaic. We see even from 2 Kings xviii. 26 that by the time of Hezekiah (c. 700 B.C.) Aramaic was the 'diplomatic' language between Assyria and Judah, and slightly later it became the language of trade and diplomacy throughout W. Asia, as is shown by the numerous inscriptions and by other evidence. Hebrew was still retained as the written language, but even here—as we can see from the later books of the O.T.—it is largely intermixed with Aramaic forms and coloured by Aramaic idioms. Hebrew continued to be the language of religious literature and poetry, and the Scribes made continuous efforts to keep up its high standard. A new form of Hebrew was developed. It is known as *Mishnaic* Hebrew. It was partly artificial, containing a certain number of borrowings from the Aramaic, Gk., and Lat. languages, and, at a later stage, from Persian and Arabic, and was so called because the chief literary monument of this period (2nd to 3rd cents. A.D.) is the *Mishnah* (from Heb. *shanah*, 'to learn by heart,' 'to repeat'), which is a kind of code, containing nearly 4000 rules. To this code, later on, was added the *Gemarah* (from *gamar*, 'to supplement,' 'to complete,' or also 'to learn'), which is a sort of supplement to and commentary on the *Mishnah*, and includes the store of *Haggadah* ('homily'). The *Gemarah* is written in Aramaic; *Mishnah* and *Gemarah* together form the *Talmud* (i.e. what is 'learned,' or 'taught,' from Heb. *tamad*, 'to learn'). There are 2 *Talmuds*, the *Babylonian Talmud* (written in E. Aramaic) and the *Jerusalem Talmud* (written in Palestinian Aramaic). While both have the same *Mishnah*, they differ considerably in their *Gemarah*. The *Babylonian* one is the more perfect and authoritative, and it is also much more copious (about 4 times as large) than the *Jerusalem Gemarah*. The *Talmudic* literature was intended principally for the learned. It grew from the discussions in the academies and schools; and thus there arose also a system of biblical expositions, and popular lectures and sermons. These discourses were given in the synagogues, and formed the basis of the *Midrashic* literature, the *Midrash*, from Heb. *darash*, 'to expound.' (Quotations from prior *Midrashic* works, especially those whose contents are *Halachic* ('legal'), are in Hebrew.) The word *Midrash* also meant 'doctrine' or 'study,' and was sometimes used synonymously with *Talmud* or *Gemarah*. The *Talmudic* literature is a very valuable body of laws and decisions, a monument of Jewish learning, acumen, and wisdom, and it has moulded the Jewish people, promoting their intellectual activity,

regulating their conduct, influencing their opinions, stimulating their spiritual and religious life. The Jerusalem Talmud seems to have been completed in the 4th cent. AD, the Babylonian Talmud in the 5th cent. AD. Generally, it may be said that the Talmud was the result of the discussions in the academies and of the deliberations of Rabbis, extending over a period of some 6 or 7 cents. It is not a book, but a literature. It is not the work of one or of sev. authors, but the result of the labour of generations. The nature of the language is concise and compressed. Rabbinic Judaism is the Judaism of the Talmud. To modern ideas many of the Talmudic sections may seem obsolete, but it must be borne in mind that in so vast a literature—dealing with philosophy, astronomy, mathematics, law, medicine, anatomy, etc.—we are bound to come across much that is useless. However, its main idea being 'to make a fence round the law', it succeeded in preserving Judaism for many cents. to come. The study of the Talmud spread rapidly through all countries of the Diaspora, from Babylonia through North Africa and Italy to Spain, France, Germany, and E. Europe.

Another important branch of Heb. literature is the *Piyyutin*, or 'liturgical poems.' Some of these survived in the Jewish prayer-books, but a great part seems to have been lost for ever. Many fragments of Piyyut literature were discovered in the famous Genizah of Cairo. This enormous collection derives its name from the Heb. *ganaz*, to hide, store up. The Jews were accustomed to put away all sorts of material written or printed in Hebrew lest anything on which the name of God might be inscribed should be desecrated by profane use. Sev. Piyyutin have already been pub. in I. Davidson's *Thesaurus of Medieval Hebrew Poetry*, 1824-9; others have still to be studied, and a Research Institute for the study of Hebrew Poetry has been founded at the Heb. Univ. of Jerusalem, with the task of reconstructing this lost branch of Heb. literature. The authors of these poems belong to different periods and localities. Of some nothing but their names is known. Others are more or less known; the earliest of them seem to have lived in the 6th to 8th cents. AD, but the majority belong to the 8th to 11th cents. These beautiful poems, written mainly in Hebrew, reflect many aspects of the religious and cultural life of Oriental Jewry during the millennium following the destruction of the Temple. Some of these poems were composed by the celebrated Gaon Saadya (b. 822). Other important literary work was produced under the Gaonate (*see* GAON).

The Heb. alphabet, as already mentioned, was purely consonantal, but the absence of vowel-letters was not strongly felt, because, it must be emphasised, the Semitic stems are essentially consonantal. However, as Heb. speech passed out of daily use, it became necessary to introduce some form of vocal distinction in

order to read and explain the Holy Scriptures correctly. Originally, 4 of the consonants (the glottal *aleph* and *he*, and the semi-vowels *vav* and *yod*) were also employed to represent long vowels, but gradually they began to lose their weak consonantal value, and became a kind of vocal consonant, known as *maitres lectionis*. Not only were they used as long vowels, but (for instance in the recently discovered Heb. MSS. which are partly assigned to the 1st cent. BC) they were used with such abundance and with so many combinations of two letters, such as *yod-aleph*, *vav-aleph*, etc., that change in spelling or addition of letters became forbidden. 'The omission or the addition of one letter might mean the destruction of the whole word' says the Talmud. It became, therefore, necessary to introduce a complementary system (not to be employed in the synagogue rolls) of vocalisation by punctuation marks, called *niqqud*. Three such vocalisation systems are known, the 'Babylonian', which was superlinear, the 'Palestinian', also superlinear, and 'Tiberiadic', partly superlinear, but mainly sublinear.

If Rabbinic Judaism was mainly creative, medieval Judaism was mainly preservative. Medieval Judaism too possessed creative minds, philosophers, codifiers, teachers, commentators, polemic writers, great poets, but their common starting-point was, generally speaking, the Talmud. In Cairo there was a galaxy of Jewish intellect, while in Spain Jewish culture was to reach a height it had never previously attained. Jehuda Halevi (1080-1140), a Heb. poet of the most fervid depth of heart, 'poured forth his passionate longing for Palestine in words of matchless sublimity' (E. Levine), but the most important contribution to Judaism came from Moses Maimonides (1135-1205), the greatest intellect in Jewry in the Middle Ages. He is regarded as a 'second Moses.' Maimonides wrote in Hebrew and Arabic. Also the writings of the great medieval Franco-Jewish biblical commentators Solomon ben Isaac of Troyes, known as Rashi, and David Kimchi of Narbonne were of the highest importance. Rashi (1040-1105) wrote a commentary on the entire Talmud, and another on the Bible. Kimchi's commentary was used in a large degree by successive generations of Christian exegètes, particularly in the preparation of the Eng. 'Authorised Version' of 1611. Other great commentators were Gershon (late 10th and early 11th cents.). Abraham ibn Ezra, Moses ibn Ezra, Nachmanides, Jacob Tam, the founder of the school of Tossaphists who fl. in France and Germany for over 200 years, Meier of Rothenburg, and Joseph Caro, who in the 16th cent. composed the *Shulchan Aruch*, a collection of former Jewish codes, which remained the standard guide in Jewish life.

Despite the various inquisitions and censorships of the Christian Church and her attempts during the Middle Ages to eradicate Heb. literature altogether, the

Heb. language survived. In Paris, in June 1242, 24 cartloads of Heb. MSS. were publicly burnt, and similar destructions occurred at various times in various places, but Hebrew remained up to the 19th cent. the language of the synagogues, of the Jewish prayers, and of the Jewish religious schools, and was also the *lingua franca* of Jewish scholars of all ages and all countries.

The rebirth of the Hebrew tongue through Zionism.—One striking result of the development of Zionism (q.v.) is the rebirth of Hebrew as a living language; for both ideal and practical considerations have combined to associate the return of the Jews to Palestine with the return to Hebrew. The ideal is the estab. of the Heb. nation, speaking the Heb. tongue, on the soil of the anct. Hebrews. The cultural renaissance involved in the foundation of the Jewish State of Israel in Palestine is necessarily based on Hebrew, language of the national past of the Jewish people and of their great original contributions to civilisation. But also a common language was a practical necessity for a polyglot community of Jewish immigrants into Palestine from all parts of Europe, the Near East, and North Africa, and no language excepting Hebrew had any claim to general acceptance. While this rebirth of Hebrew is the fundamental achievement of Zionism in the cultural sphere, Hebrew had ceased to be exclusively a religious language, even in the wide connotation of the term 'religious' as applied to Judaism, a century before the birth of Zionism as an organised movement. From the latter half of the 18th cent. onwards, a secular Heb. literature had developed amongst the Jews of E. and central Europe (its bp., however, being Italy), though it was a purely literary movement and its language not one in which people habitually spoke or thought. It was, in fact, only with the emergence of the national idea in the eighties of last century and the estab. of Jewish settlements in Palestine that Hebrew began once again to be a spoken language and the possibility created of a Heb. literature firmly rooted in the life of the people. To-day the supremacy of Hebrew in the life of the Jews in Palestine is assured. Indeed, Hebrew is the official language of the State of Israel. The pioneer work of the early Heb. teachers has borne fruit in a network of Heb. schools, elementary, secondary, and technical, with some 200,000 pupils, and the educational structure is crowned by the Heb. Univ. in Jerusalem and three other educational institutions of univ. grade. Hebrew as it is spoken and written in Palestine to-day is substantially the language of the Heb. Bible and the other anct. and medieval literature of the Jewish people, though naturally much adaptation and development have been necessary to fit it for its new function under the conditions of to-day; but since the early days of Jewish resettlement in Palestine, men of scholarship have sought to keep the development of the language on the right

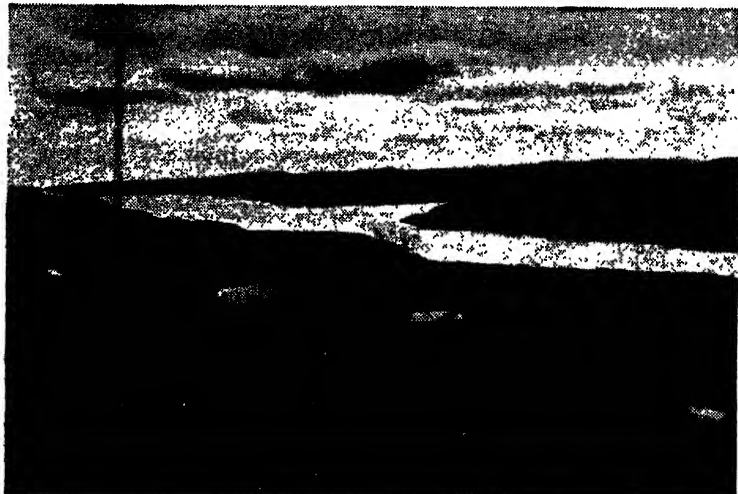
lines (León Simón). Hebrew, indeed, which had been handed down for centuries as the language of prayer and literature, was, however, as already emphasised, not a dead tongue before the appearance of the Zionist movement. It has been not only the *lingua franca* of Jewish scholars all over the world, but also the day-to-day language of correspondence between Jews living in various countries. Moreover it should be realised that in the Dark and Middle Ages Jewish communities in the Muslim realm cultivated equally Hebrew and Arabic. Whereas their great writers from Spain, Gabirol, Halevi, Ibn Ezra, and Maimonides, wrote their poems and their homilies in Hebrew, their science and philosophy was written in Arabic. Furthermore, the revival by Christians, of the study of Hebrew which was learnt from Jews, was an integral part of the Renaissance and Reformation in W. Europe. In the dark ages of Jewish hist. which followed that epoch, Hebrew was the regular vehicle of the religious life of the Jewish masses in Poland, though Yiddish (q.v.), which they developed as a second tongue, was the language of the home and the one in which their Heb. religious instruction was explained. And when, at the end of the 18th cent., the Jews in Germany and W. Europe had the opportunity again to enter into the Jewish cultural activity, Hebrew, the language of literature, not Yiddish, the language of the Diaspora, became in great part the instrument of their Jewish national education. See H. Brody and K. Albrecht, *The New Hebrew School of Poets*, 1906; C. Brockelmann, *Grundriss der vergleichenden Grammatik der semitischen Sprachen*, 1908-13; F. H. W. Gesenius, *Hebrew Grammar* (ed. E. Kautsch, revised by A. E. Cowley), 1910; A. S. Waldstein, *Evolution of Modern Hebrew Literature*, 1916; G. R. Driver, 'Modern Study of the Hebrew Language' in A. S. Peake (editor), *The People and the Book*, 1925; G. Bergstrasser, *Einführung in die semitischen Sprachen*, 1928; F. Lachower, *Modern Hebrew Literature* (in Hebrew), 4 parts, 1928-31; S. Spiegel, *Hebrew Reborn*, 1930; J. Klausner, *History of Modern Hebrew Literature*, 5 vols., 1930-49; M. Waxman, *A History of Jewish Literature*, 1930-3, 2nd ed., 1947; D. B. Macdonald, *Hebrew Literary Genius*, 1935; H. and N. Chadwick, *Growth of Early Hebrew Literature*, 1936; D. W. Thomas, 'Language of the Old Testament' in *Record and Revelation*, 1938; N. Bentwich, *Judaea Lives Again*, 1944; C. A. Simpson, *The Early Traditions of Israel*, 1948; L. Finkelstein, *The Jews*, 2 vols., 1949; S. W. Baron, *A Social and Religious History of the Jews*, 2nd ed. (with copious bibliography), 1952 ff.

Hebrews, see ISRAEL; Jews.

Hebrews, Epistle to the. The best MSS. do not give the remark found at the end of the Eng. trans., 'Written from Italy by (i.e. by hand of) Timothy.' Non-Rom. Catholic scholars generally deny the

Pauline authorship, and many even of the Rom. Catholic scholars hold that the Epistle, though substantially St Paul's, has been 'composed and phrased by a redactor' (as Origen suggested). There are striking differences between Hebrews and the other Pauline epistles, but they must not lead us to dismiss or ignore many notable similarities. The hist. of the disputed authorship is a long one. In the E. the letter has always been accepted as by St Paul; in the W. its authorship remained in doubt until the 4th cent. The Arian controversy, however, brought

liturgical act of sacrifice, and His Ascension and Heavenly Session as the perpetuation and presentation of that sacrifice in heaven. The writer wished to renew the fervour of a community overshadowed by the estab. religion with its splendid ritual and magnificent trappings, and by the fanatical zeal and ardent nationalism that surrounded and menaced it. With this object in view, he sets himself to prove the finality and the perfection of the Christian religion, and its superiority to Judaism. See commentaries by B. Westcott, 1928; F. D. Nar-



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THE HEBRIDES: BALALLAN AND LOCH ERISART

closer relations between E. and W., and the E. testimony to H. as by St Paul prevailed, and was not questioned but affirmed repeatedly from St Augustine's day until, at the Reformation, the Protestants again queried it. It has been the fashion to insist that the Hebrews addressed were the Jewish Christians in Rome itself, chiefly because the earliest extant quotation from H. is by Clement of Rome as early as AD 95. But the traditional view is that it was written to Jerusalem, and Bornhäuser in 1932 suggested the addressees were Levitical converts like those in Acts vi. 7. It seems evident that H. implies that the Temple is still standing, so that it was written before AD 70, and indeed before the Jewish war began. The latest date possible on that assumption seems to be AD 66. The theme of the letter is of enormous theological importance, especially for its representation of Christ as the great high priest, of His death as a

borough, 1930; and T. H. Robinson, 1933: Bornhäuser, *Empfänger v. Verfasser des Briefes an die Hebräer*, 1932; U. Leonard, *Authorship of Epistle to the Hebrews*, 1939.

Hebrews, Gospel according to the, the most interesting of the apocryphal gospels of the first centuries. It was in Aramaic, and only a few fragments survive, notably diverging from our St Matt. with which St Jerome for a time thought it connected. Origen and St Jerome quote it occasionally, and the latter also made Gk and Lat. translations of it, but these last have perished. It was used by a Jewish Christian sect called the Nazarenes. Cf. M. R. James *Apocryphal N.T.*, 1926.

Hebrides, or Western Islands, situated off the W. coast of Scotland, and divided into the Outer H. and the Inner H. The Outer H. comprises Long Is. (Lewis-with-Harris), North Uist, Benbecula, South Uist, Eriskay, Barra, Vatersay, Sandray, Pabbay, Mingulay, Berneray, the Shianta,

St Kilda, the Flannan Is., and Rockall. They are composed almost entirely of gneiss, and are therefore sometimes called Gneiss Is. The Inner H. are separated from the Outer group by the Minch and Little Minch. They are scattered, including Skye, Canna, Rhum, Elg, Muck, Coll, Tiree, Mull, Staffa, Treshnish, Iona, Colonsay, Oronsay, Jura, Islay, and many others. The 2 groups contain more than 500 is., of which about 100 are uninhabited. St Columba landed in Iona c. 563 and began his work of converting the Picts to Christianity. In 794 the H. suffered their first invasion by the Scandinavians, and during the 9th cent. were finally subdued by Harold Haarfagre, king of Norway, and remained subject to the Norwegians until 1266. The is. were then governed by the Scottish race of Somerled until John Macdonald of Islay made himself Lord of the Isles (1346). They were subsequently annexed to Scotland. Until the end of the 13th cent. the H. also included is. in the Firth of Clyde, the peninsula of Kintyre, the Isle of Man, and the Isle of Rathlin. Kismul Castle, in the Outer H., was the stronghold of the practical MacNeils of Barra, whose exploits are commemorated in the Hebridean song 'Kismul's Galley.' It was in the is. of Skye that Prince Charles Edward took refuge after his defeat at Culloden in 1746. More than one in 10 of the inhab. speak Gaelic only, and 47,000 speak both Gaelic and Eng. Only 200,000 ac. are used as arable land, the is. for the most part being rocky or sandy, with many small lochs and morasses. The climate is healthy and mild. The prin. industries are the production of Harris tweed, fishing, the raising of cattle and sheep, and distilling which is carried on principally in Islay. Livestock, wool, whisky, slate, and limestone are exported. There are about 1300 weavers on the is. of Lewis, many of them combining this work with crofting or lobster-fishing. The is. are popular with tourists and sportsmen. There are bus services but no railways; air services connect the is. with the mainland. Stornoway, on the is. of Lewis, and Portree in Skye, are the chief tns; there is an airport at Stornoway. The is. are included administratively in the cos. of Ross, Inverness, and Argyll, but have their own members of Parliament. Total area 2812 sq. m.; pop. 60,000. See also LEWIS, or LEWIS-WITH-HARRIS. See M. Martin, *A Description of the Western Isles of Scotland*, 1703; James Boswell, *A Journal of a Tour to the Hebrides with Samuel Johnson*, 1785; Sir Walter Scott, *Lord of the Isles*, 1815; J. Macculloch, *Description of the Western Islands of Scotland*, ... comprising their Geological Structure, 1819; W. C. Maokenzie, *History of the Outer Hebrides*, 1902; Seton Gordon, *Hebridean Memories*, 1923; A. A. MacGregor, *Behold the Hebrides*, 1925; J. F. Anderson, *To Introduce the Hebrides*, 1933; H. Sutherland, *Hebridean Journey*, 1939.

Hebrides, New, see New HEBRIDES.

Hebron, 'al-Khail, or El Khalil (the Arab name is an abbreviation of Khail-

al-Rahman, i.e. Abraham, the Friend of God). Anct city of S. Judah, now in the kingdom of Jordan, and one of the oldest continuously inhabited tns in the world. In Joshua xv. 13 we read of its capture by Caleb; and it is especially venerated by the Muslims because of its associations with the Patriarch Abraham, who pitched his tent here and was buried in H. David made it the H.Q. of his movement against Jerusalem. Abner was slain by Joab at the city gates, and in it David executed the murderers of Ishbosheth. It was later seized by the Edomites, but was recovered by Judas Maccabaeus. Finally it fell before Vespasian. In the O.T. H. is known also by the name Kirjath Arba; in the N.T. as H. only; as Chebron under the later Rom. Empire; and as Saint Abraham in the time of the Crusades. Its present-day features are high stone houses, narrow streets, and vaulted bazaars at which are sold sheep-skin coats and blown glass. The most famous monument of the city is the Haram, sacred to Muslims as enclosing the cavern of Machpelah (q.v.) which Abraham purchased from Ephron the Hittite for the burial-place of Sarah. The mosque itself, as distinct from the area, was adapted by the Arabs from a Crusaders' church; in it, or within the precincts, are the cenotaphs of Abraham and Sarah, which occupy 2 octagonal chapels, of Jacob and Leah, N. of the area of the Haram, of Joseph, which is in a separate enclosure, and of Isaac and Rebecca inside the church. There are also remains of the Herodian and Rom. periods. In 1929 many of the Jews of H. were massacred by the Arabs and the rest fled. During the Palestine war of 1948, Israel failed to capture H., which was incorporated in Jordan. Pop. c. 30,000.

Hebrus, see MARITZA.

Hecatasus of Miletus (c. 535-c. 476 BC), Gk historian whose *Voyage round the World* (*Gēs Periōdos*) was used by Herodotus. See F. Jacoby, *Die Fragmente der griechischen Historiker*, I, 1923; L. Pearson, *Early Ionian Historians*, 1939; J. O. Thomson, *History of Ancient Geography*, 1948.

Hecate, Gk goddess, daughter of the Titan Perses and Asterie, who kept her mighty power under Zeus and ruled in Heaven, Earth, and the Netherworld. Frequently identified with Selene (moon), Artemis, and Persephone, she was sometimes represented with 3 bodies. Patroness of magic, she was mother of Circe and Medea, and also presided over birth and death. She was worshipped in the wilder parts of Greece, especially at cross-roads, where black victims were sacrificed to her.

Hecatomb, Greek, a great public sacrifice, originally of 100 oxen.

Hecatoncheires (100-handed), see ARGAEON; TITANS.

Hecht, Ben (1894-), Amer. writer, b. New York City. Reared in Wisconsin, he was successively acrobat, violinist, and newspaper reporter. From 1914 to 1923 he was on the staff of the Chicago

Daily News, then founded the Chicago *Literary Times*. His works include: *Erik Dorn*, 1921, *Gargoyles*, 1922, *The Florentine Dagger*, 1923, *1001 Afternoons in Chicago*, 1923, *The Egoist*, 1923, *Humpty Dumpty*, 1924, *A Book of Miracles*, 1930. In collaboration with Charles MacArthur (Amer. playwright, b. 1895) he wrote the plays *The Front Page*, 1928, *Twentieth Century*, 1933, and the motion pictures *Crime without Passion* and *The Scoundrel*.

Hecker, Isaac Thomas (1819-88), Amer. Rom. Catholic priest, and founder of the community of 'Paulist Fathers.' He founded the *Catholic World* and the Catholic Publication Society, and was the author of *Catholicity in the United States*, 1879, *The Church and the Age*, 1888, etc.

Heekmondwike, par. and mrkt tn of the W. Riding of Yorks, England, 2½ m. from Dewsbury, and noted for the manuf. of carpets and moquets, with engineering works. Pop. 9000.

Hecla, see HECLA.

Hectare, see METROLOGY.

Hectographic Gelatine, see COPYING.

Hector, Trojan warrior, son of King Priam and Hecuba, husband of Andromache, father of Astyanax, and the slayer of Patroclus. In anger, Achilles drove back the Trojans; but H., in spite of the entreaties of his parents, awaited the approach of the enemy by the Scaean gates. At the sight of Achilles he fled and was pursued 3 times round the walls of Troy. At last Achilles killed him, and, fastening the body to his chariot, dragged it 3 times round Patroclus's tomb. At the bidding of Zeus, he gave up the body to Priam, who buried it in the citadel. See *Iliad*, vi, xxii, *Aeneid*, i.

Hecuba, wife of Priam, king of Troy, mother of Hector, Paris, Cassandra, and many others. At the fall of Troy she was carried away to Greece as a slave by Ulysses. At Thracian Chersonesus her daughter Polyxena was sacrificed by the Greeks, whereupon H. avenged the deaths of her children by killing Polydorus, king of Thrace, who had murdered her son Polydorus. She was pursued, but changed into a dog and leapt into the sea.

Hedge, a fence of bushes, shrubs, or small trees, growing closely together in line. For garden H.s, formal boundary, or background, H.s are best made with box, holly, or yew; the last only where stock cannot eat it as it is poisonous. Privet stands clipping well, but is greedy rooting. The quickest H.s are made with hawthorn, *Lonicera nidia* or its v. *yunnanensis*. Myrobalan plum is good for thicket H.s. Beech and hornbeam, retaining their leaves in winter, are economical and colourful. Where there is space, cherry laurel, Portugal laurel, and *Laurustinus* make good evergreen H.s. *Rhododendron ponticum* can be used on acid soils. The best coniferous hedging plant is *Chamaecyparis lawsoniana* and varieties. For informal H.s, flowering shrubs such as *Berberis darwinii*, *B. stenophylla*, Escallonia, Euonymus, *Coloneaster simoneti*, Syringa, Pyra-

cantha, Ribes, and Sweet Brier may be used. Lavender, dwarf Box, Rosemary, and dwarf Veronicas give low H.s. Gorse, Tamarisk, and Buckthorn are good for gardens exposed to salt-laden S. winds. See J. L. Bedall, *Hedges for Farm and Garden*, 1950.

Hedge Mustard, an ann. or overwintering native herb, *Sisymbrium officinale*, with rosetted leaves and small yellow flowers, family Cruciferae. Once used medicinally for catarrh, etc.

Hedge-nettle, popular name of the species of *Stachys* (q.v.), a genus of labiate plants found in Europe, Asia, Africa, and America.

Hedge-sparrows, or *Accentor modularis*, species of passeriform birds belonging to the family Prunellidae; it resembles a sparrow, having brown plumage streaked with black.

Hedgebote, old term denoting the right of a tenant to cut wood for purposes of repairing hedges, etc., on the land he holds.

Hedgehog, name given to sev. species of insectivora, belonging to the family Erinaceidae; they are distinguished from their allies by their spines. *Erinaceus europaeus*, the common European H., is generally about 9 in. long, and 4 or 5 in. high; the spines reach a maximum length of 1 in., are sharply pointed and grooved along the sides, and controlled by the muscles of the back. The animal can roll itself into a ball, bristling with spines, and, thus protected, will sometimes fall from a considerable height. The H. eats insects, slugs, mice, frogs, young birds, etc., and has been known to attack vipers; it is sometimes domesticated as a protection against vermin. Hibernation with the H. is a matter of temp. H.s kept in a warm place will continue active throughout the winter and, with plenty to eat and drink, will take no harm. Even if it sinks into a true torpor the rise of the temp. will rouse the H. again. Young H.s may arrive at any time from early spring to late autumn, but ordinarily spring litters predominate. The young are b. complete with spines, but they are blind and helpless. They grow rapidly, their prickles darken and harden, and their eyes open. H.s may do some damage, and casks are known of coops invaded and chickens killed, but they are not typical.

Hedgeley Moor, tract of moorland in Northumberland, England, situated in the Glendale rural dist., 6 m. SE. of Wooler. It is noted as the scene of a battle in 1464 between the adherents of the houses of Lancaster and York, in which Sir Ralph Percy was killed.

Hedin, Sven Anders (1865-1952), Swedish explorer, b. Stockholm, son of Ludwig H., chief architect of Stockholm. Educ. at Stockholm, Upsala, Berlin, and Halle. His work as an Asiatic explorer dates from 1893, when he began his journey across Asia from Orenburg to Pekin. He travelled via Lop-Nor and Tibet, and the journey took him 4 years. During these years he explored the glaciers of the Mustaghata, and the mts around the

sources of the Yarkand Daria. In 1899 he made his second Asiatic journey. On this occasion he travelled down the Tarim R. to the Lake Lop-Nor. He then crossed Tibet, travelling SE., and made two unsuccessful attempts to enter Lhasa. He succeeded in doing this on his third expedition, 1906-8. Started on a new journey through China, 1926. He was ennobled by the king of Sweden, 1902. Hon. K.C.I.E., 1909. Pubs.: *Journey through Khorasan and Turkestan*, 1892, *Through Asia*, 1898 (pub. in 9 languages), *Scientific Results of a Journey in Central Asia*, 8 vols., 1899-1902, *Adventures in Tibet*, 1904, *Trans-Himalaya*, vols. I and II, 1909, *Oerland to India*, 1910, *From Pole to Pole*, 1911, *Trans-Himalaya*, vol. III, 1913, *With the German Armies in the West*, 1915, *Bagdad, Babylon, Nineve*, 1917, *Jerusalem*, 1917, *Southern Tibet*, 9 vols., 1917-22, *My Life as an Explorer*, 1925, *The Gobi Desert*, 1929 (Eng. ed. 1931), *Jehol, City of Emperors*, 1931, *Lop-Nor, the Wandering Lake*, 1937, *Riddles of the Gobi Desert*, 1933, *A Conquest of Tibet*, 1935, *Scientific Results of the Sino-Swedish Expedition*, 1926-33, 23 vols., 1937-42, *Chiang Kai-shek, Marshal of China*, 1939; later books include *The Wandering Lake*, 1940, *Without Assignment in Berlin*, 1949.

Hedjaz, see HEJAZ.

Hedirah, see HEJIRA.

Hedmark, co. of Norway, on the Swedish border with Akershus to the S., Oppland to the W. and S. Trondelag to the N. It is important for its forestry and agriculture. Area 10,621 sq. m.; pop. 173,000.

Hedon, municipal bor. of E. Riding, Yorks, England, in the Holderness par. div., situated 8 m. E. of Hull. The industries are chiefly agric. and there are large brick-fields. Pop. 2000.

Hedonism, from Gk *hêdonê*, pleasure; hence, in ethics (q.v.), the theory that pleasure or happiness of one kind or another is the chief aim in life. Hedonistic theories have been held from the earliest times. According to one view, happiness is the chief good and moral end for each individual; according to the other, the well-being and pleasure of the general community and of all sentient creatures is the main thing to be desired. The earliest and most extreme type is that of the Cyrenaic and Epicurean schools, who taught that the sentient pleasure of the moment is the only good for mankind. This view is known as Egoistic H. Opposed to this is Universalistic H., which owes its growth to modern writers, such as Hume, Bentham, and Mill, whose point of view is based on a wider conception of life, and who maintain that the only real happiness is that of the community—or, at any rate, the majority; the criterion is society, not the individual. Passing on to the theories of Utilitarianism (q.v.) and Social Ethics, one is confronted by the problem of reconciling and adjusting the claims of the individual with those of society. An important exposition of the theory of Utilitarianism is contained in H. Sidgwick's *Methods of*

Ethics, 1874. He associates the hedonistic theory of the moral standard with an intuitive theory of knowledge which utilitarians do not usually hold. See also J. H. Muirhead, *Elements of Ethics*, 1892; and J. S. Mackenzie, *Manual of Ethics*, 1897; J. Watson, *Hedonistic Theories*, 1895; E. Albee, *History of English Utilitarianism*, 1902; C. Gore, *Philosophy of the Good Life*, 1930; H. L. S. Samuel, *Practical Ethics*, 1935.

Hedwig, St (1174-1243), daughter of the duke of Croatia and Dalmatia and aunt of St Elizabeth of Hungary (q.v.). Married at the age of 12 to the duke of Silesia, to whom she bore 7 children. She and her husband greatly promoted the spread of Christian civilisation in their duchy through the foundation of religious houses, e.g. the Cistercian nunnery at Trebnitz, where H. spent her widowhood. Canonised 1266. Festival 16 Oct.

Heem, Jan Davidesz van (c. 1606-84), Dutch painter, b. Utrecht, son of David van H. (c. 1570-1632), a noted still-life painter. One of the pictures of the elder van H. is in the National Gallery, London. The son surpassed his father in the variety of his still-life subjects and in technical equipment and, was much the greater artist. His paintings chiefly consist of magnificent vases of flowers and fruit and rich garlands against a background of green. Examples of his work are in many Ger. galleries, and at the Louvre, The Hague, and Amsterdam, and he is also represented in the Wallace Collection, London. His son, Cornelius van Heem (1631-95), was also a painter.

Heemskerk, Maerten Jacobsz, often called Maerten van Veen (1498-1574),



W. F. Mansell

HEEMSKERK: SELF-PORTRAIT

A painting in the Fitzwilliam Museum, Cambridge. The building on the right of the face is the Colosseum at Rome.

Dutch painter, b. Heemskerk in Holland, studied his art under Cornelisz Willemsz and Jan Scorel, painters at Haarlem. In his early work he imitated Mabuse, but during a visit to Rome (1532-5) he came under the direct influence of the great masters. His pictures are well represented in the galleries of Europe, but in

England he is best known by his drawings. His chief works are: a 'Crucifixion' (in the Ghent Museum), 'Judgment of Momus' (in the Berlin Museum), 'Triumphs of Silenus' (in Vienna), and 'St Luke Painting the Likeness of the Virgin and Child' (at Haarlem).

Heemstede, tn in the prov. of N. Holland, Netherlands, 3 m. S. of Haarlem. Pop. 25,200.

Heeren, Arnold Hermann Ludvig (1760-1842), Ger. historian, b. near Bremen. His *De Encomiis*, 1785, attracted much attention, and in 1787 he became a prof. of philosophy, and in 1801 of hist., at Göttingen. He is regarded as a pioneer of the economic method of historical study; he did not lay so much stress on political events as on the economic relations of states. His *Historische Werke* were pub. at Göttingen in 15 vols., 1821-30.

Heerenveen, industrial tn in the prov. of Friesland, Netherlands, 18 m. SSE. of Leeuwarden. Pop. 24,870.

Heerlen, tn in the prov. of Limburg, Netherlands, 13 m. ENE. of Maastricht. It is an important coal mining centre and has glass works. Pop. 64,700.

Hegel, Georg Wilhelm Friedrich (1770-1831), b. Stuttgart, was the last of the 4 great Ger. idealist-philosophers of that period, the others being Kant, Fichte, and Schelling (q.v.). He was educ. at the univ. of Tübingen, where began his friendship with Schelling, who, although younger by 5 years, must rank as H.'s precursor by virtue of his extraordinary precocity—he had pub. sev. philosophical papers of importance even during his student days. In 1793 H. left Tübingen, and lived by teaching, principally in Frankfurt. But whilst thus engaged, his mind, stimulated by his studies of Wolff, Fichte, and Plato, was slowly maturing, and in 1801 he pub. a brilliant comparative critique on the systems of Fichte and Schelling, somewhat to the latter's advantage. The same year he became a prof. at the univ. of Jena; during the 5 years that he spent there he became more intimate with Schelling, and together they issued a philosophical jour. At this time, Napoleon was pressing against the Prussians, and the Battle of Jena (1806) caused the univ. to be temporarily disbanded, with the result that H. had to accept the editorial duties of a small newspaper for a time. Before long, however, he had once more secured an appointment as teacher in Nuremberg, and it was during the 9 years he spent in that position that he married (1811). Meanwhile, his first work of real significance had been pub., *Phänomenologie des Geistes*, 1807 (Eng. trans. *The Phenomenology of the Spirit*, 1894), and the *Wissenschaft der Logik*, the 1st vol. of his definitive philosophy, followed in 1812 (Eng. trans. *Science of Logic*, 1929). In 1816 he left Nuremberg for a professorial chair at Heidelberg, where in the same year he produced his great encyclopaedia of the philosophical sciences (*Enzyklopädie der philosophischen Wissenschaften*), and 2

years later he succeeded Fichte in the chair of philosophy at the new univ. of Berlin, a post which he filled with distinction until his death, from cholera, 13 years later. It was here that he wrote, amongst many other important works, *Grundlinien der Philosophie des Rechts*, 1821 (Eng. trans. *The Philosophy of Right*, 1942). During his later years he was esteemed the leading force in contemporary Ger. philosophical thought.

After his death many of his hitherto unpublished lectures and essays on religion, hist., and aesthetics were collected and pub. by a circle of his chief students and friends. Hegelianism must be studied in relation primarily to the philosophy of Kant. Kant had contended that, whilst the value of an object was purely in the cognition thereof, and not in any degree intrinsic, a dualism existed between that object and the cognition, i.e. between the noumenon and the phenomenon. H., in his development of this idea, evolved the dualism out of consideration by identifying reality with rationalism. Agreeing with Kant that it is impossible to consider life philosophically as a purely material existence apart from essential idea, he urges that matter is non-existent except as a perception, that is to say, an expression to an individual mind of some essential idea. He therefore proceeds to examine, not the form, but the idea, of thought, since what is true of a perception is true of the object. Hegelianism is thus the outcome of the idealisms of Kant, Fichte, and Schelling, although less romantic and more absolute; it is divided into 3 headings: (a) logic, (b) natural philosophy, (c) philosophy of spirit. *The Science of Logic*, in which his whole system is traced out, both logically and metaphysically, has been described as the only production of modern thought worthy to rank with the *Metaphysics* of Aristotle; in it, H. analyses and systematises the fundamental conceptions that underlie external forms by the method of 'dialectic,' for which he is largely indebted to Fichte. His *Natural Philosophy* is a concrete application of this analysis to science and to the social and spiritual individuality of man; but, on account of his lack of deep scientific knowledge, it is of very little value. *The Philosophy of Spirit* is a further application of *Logic*; in this, H. develops the moral and abstract element of the work in correlation with the idea of evolution. Apart from the purely scientific significance of H.'s writings, they contain much of importance on religion and the aesthetics of art. In religion, he was influenced chiefly by Fichte's subjective idealism. His views on art are of great interest; to him, art is a thing apart from nature, for he holds that, since art should express idea in sympathetic form, nature is not intrinsically or necessarily beautiful, but is dependent for its beauty on individual perception. He classifies art, on this basis, into: (1) Symbolic, wherein the expression of indefinite ideas

is attempted on a colossal scale (e.g. Oriental architecture); (2) Sensuous or Classical, which is best exemplified in Gk sculpture (the pagan aesthetic of idealised humanism); and (3) Christian Art, a return to the symbolic in style of idea, vague and indefinite in its concept of infinity and omnipotence, but more exquisitely expressed in the narrower limitations and more plastic media of painting, music, and poetry. H.'s teachings were subsequently developed in 2 directions, one of them on the lines of his own idealism, the other leading to arrant positivism. Of these the latter is more powerful, and tends to atheism and radicalism under Strauss, Feuerbach, and Bruno Baur, who claim their systems to be directly evolved from H., in spite of the orthodox and conservative sympathies he professed.

H.'s *Philosophy of History* (Eng. trans. 1857) was the basis of the dialectical materialism of Karl Marx, and his idealisation of the State may be said to be the underlying principle of the ideology of Fascism (see on this Crossman's *Plato To-day*). It is not without interest to note that in the opinion of Nietzsche, the name of Schopenhauer was better known than that of H., and yet that Schopenhauer, unlike H., was nonetheless a solitary being, who had failed of his effect. His complete works were pub. in 1832-4 (18 vols.) and in 1927-40 (26 vols., ed. by H. Glockner). See E. Caird, *Hegel*, 1883; W. T. Stace, *The Philosophy of Hegel*, 1924.

Hegesias (fl. c. 300 BC), Gk rhetorician and historian, b. at Magnesia in Lydia. According to Strabo he founded the 'Asiatic' style of oratory and is criticised by Cicero for his affectation and bombast. A few fragments of his historical writings have survived. See J. B. Bury, *Ancient Greek Historians*, 1909; F. Jacoby, *Fragmente der griechischen Historiker*, vol. II, 1927.

Hegesias (fl. 250 BC), Gk philosopher of the Cyrenaic school, a disciple of Paraetetes. In the main he taught the doctrines of Aristippus, the founder of his school; but he so ingrained in his pupils an indifference to life and a contempt for death, and at the same time the belief that it is idle to look for happiness where the soul is for ever imprisoned in a suffering frame, that he drove many of them to suicide. This gloomy tendency of his teaching became so alarming that Ptolemy Philadelphus is said to have forbidden his lectures. H. further maintained the wisdom of complete egotism and the instability and unreality of such figments of the brain as kindness and friendship.

Hegesippus (c. 350 BC), Athenian statesman and orator, and a staunch supporter of the anti-Macedonian policy of Demosthenes. He was one of the ambas. to Macedonia in 343 BC, whose mission was principally to discuss the restoration of Halonnesus. In connection with this subject, H. delivered his famous oration 'De Halonneso,' which is generally

included among the speeches of Demosthenes.

Hegesippus (c. 120-80), Palestinian, whether a Judaistic Christian or not is disputed. He wrote *Five Memorials of Ecclesiastical Affairs*, fragments of which are found in Eusebius, who tells us that H. journeyed to Rome, visiting Corinth on the way. He compiled a list of the Rom. bishops down to Anicetus (155-6). See M. J. Routh, *Reliquiae Sacrae*, 1814-1818; J. E. Grabe, *Spicilegium*, II, 1714.

Hegira, see HEJIRA.

Hegyalja, see TOKAJ.

Hehe, a Bantu-speaking tribe of Tanganyika. In 1905 they revolted against the brutality of the Germans, and were severely crushed. The revolt was known as *Maji-maji* ('water-water') from the use of magic water which was believed to turn the Ger. bullets into water. The skull of their chief was taken to Germany, and the treaty of Versailles contained a clause that it should be returned to the H. See G. G. Brown and A. M. Hutt, *Anthropology in Action*, 1935.

Heiberg, Johan Ludvig (1791-1860), Dan. dramatist, poet, and critic, b. in Copenhagen, the son of the celebrated novelist who afterwards became Baroness Gyllembourg-Ehrensvärd, and of the political writer Peter H. He attended Copenhagen Univ. and began publishing in 1814, when he brought out 2 romantic dramas. However, both in his satire, *The Prophecy of Tycho Brahe*, 1817, and later, when he ed. *Kjöbenhavn's Flyvende Post*, 1827-30, he persistently mocked at the excesses and sentimentalism of Ingemann and other popular Romanticists. From 1849 to 1856 he was director of the royal theatre at Copenhagen, and of great influence as a dramatic critic, advocating perfection of form. He introduced the Fr. vaudeville to the Dan. theatre. A comedy entitled *A Soul after Death*, 1841, is one of the best things he wrote, whilst a little play called *The Nut Crackers*, 1845, contains his most pungent satire. See M. Borup, *J. L. Heiberg*, I-III, 1947-9.

Heide, Ger. tn in the *Land of Schleswig-Holstein* (q.v.), 45 m. W. by S. of Kiel (q.v.). It is the prin. tn of N. Dithmarschen (q.v.). Pop. 24,000.

Heidegger, Martin (1889-), Ger. philosopher. He came into prominence in 1928 when he pub. his chief contribution to philosophy, *Time and Being*. In 1933, when he was rector of Freiburg Univ., he owed allegiance to Hitler's party; but, thinking he had made a political error, he relinquished the rectorship in 1934 and, in 1935, having reached the peak of his fame, he was invited, but declined, to become rector of Berlin Univ. Though his reputation stood high in Germany before the war, it did not then, apart from philosophers, spread internationally; and yet to-day, when his influence is marked in many foreign countries, it is almost non-existent in his own. H.'s philosophy has been described as atheistic existentialism, mainly because his *Time and Being* is concerned essentially with

the problem of being-in-the-world; but he himself repudiates any connection with existentialism (q.v.), with Sartre (q.v.), or even with Kierkegaard. By existence H. means man's determination to 'stand out into the truth of being' or in other words, to pierce the meaning of his existence. If man fails to transcend the limits of his world he is condemned to death and nothingness. He must 'experience the anguish of nothingness, he must first exist in the nameless, not for its own sake, but so as to realize that this nothingness is the path to being.' But the problem whether a man shall be or shall not be is an event that takes place in the experience of dread. The struggle with this dread determines whether man shall annihilate nothingness and thus perceive its other side, that of being; or whether nothingness shall annihilate man. H.'s nihilism is comparable with Dostoevsky's interpretation of suffering, which to the Russian writer not only awakens conscious thought but also has the power to redeem evil. H. is atheistic in the sense that he believes that God is absent from the world as well as that man has lost his dignity; whether God will reappear and man regain his dignity, has no place in H.'s philosophy, other than the consideration of the possibility of a God and of man's dignity. Both these possibilities reside in being as such, and being is above the human and above the divine. This much discussed philosophy may therefore be regarded as a part of Ontology (q.v.) in the sense in which Wolff defines it—that part of theoretical philosophy which deals with being in general as opposed to particular entities. The bulk of H.'s writings, including the second part of *Truth and Being*, as well as books on Nietzsche, Nihilism, and Logos, are still in manuscript and unpublished. See A. Fischer, *Die Existenzphilosophie Martin Heideggers*, 1935; A. de Waelhens, *La Philosophie de Martin Heidegger*, 1946.

Heidelberg, Ger. city in the *Land* of Baden-Württemberg (q.v.), on the l. b. of the Neckar (q.v.), 48 m. NNW. of Stuttgart. It once belonged to the bishop of Worms (q.v.), and was later the seat of the counts and electors of the Palatinate (q.v.). The chief glory of the picturesque old city, which is guarded by the forest- and vine-clad slopes of Heiligenberg and Königsstuhl, is the castle, which looks down on the riv. from a summit of over 300 ft. Begun in the 13th cent., the castle was still being enlarged and beautified in the 17th cent., but was partially blown up by the Fr. in 1689. In 1764 it was struck by lightning and was reduced to its present state of graceful ruin. The huge vat, known as the Great Tun of H., which has a storage capacity of 46,732 gallons, is entered from the castle courtyard. The famous univ. was founded in 1385 (or 1386). From here during the Reformation (q.v.) period Calvinist doctrines were disseminated far and wide, but for the period of the Thirty Years War (q.v.) its hist. is almost a blank. The valuable library, which Otto Henry began

to collect, and which has at different times been housed in the Vatican and at Paris, now contains about 4000 MSS., 3000 papyri, besides over 600,000 vols. Hitler (q.v.) founded 2 new chairs at the univ. of H., one of folk hist. or 'folklore,' and the other to direct the study of the hist. of the art of war. These 2 subjects were both branches of study in which the Nazis had a special and peculiar interest, and with the closing after the war of these 2 depts of the univ., what seems to have been the Nazi party's sole positive contribution to the academic life of H. was brought to an end. A number of former profs. who had been dismissed by the Nazis were brought back to the univ. by the allied occupying authorities. H. is not only the oldest Ger. univ., but also in its hist. it has a name famous for religious reform and generally liberal thought, and it is probably for those reasons that the Nazis selected H. to be above all others the home of Nazi culture and ideas; but notwithstanding this pollution, something of the old tradition of H. lived on under the Nazis and was a useful foundation on which to bring about the univ.'s restoration after the war, though the mental desert left by the Nazis presented a desolate prospect. H. was practically untouched physically by the war, save for the pink stone bridge which was cut in the middle, and all the univ. buildings were intact, but the problem was how to re-create a clean untainted academic life within the buildings; for the real problem of all the Ger. univs. after the war was not merely to re-educate their students but to start teaching again from the beginning the actual habit of thought. There is an excellent observatory on the Königsstuhl (built in 1894), and among the antiquities of interest are the Protestant Peterskirche, where Jerome of Prague (q.v.) pinned up his theses in 1460, and the fine Gothic Heilige Geist Kirche, which also dates from the 15th cent. The chief industries are publishing, brewing, and tobacco manuf. Pop. 126,900.

Heidelberg Man, remains, lower jaw and teeth, of a sub-man of the Pleistocene Age found, in 1907, at Mauer on a trib. of the Rhine. The remains are earlier than the Neanderthal.

Heidenheim, Ger. tn in the *Land* of Baden-Württemberg (q.v.), on the Brenz, 44 m. E. by S. of Stuttgart (q.v.). It is built on a rocky height, and has medieval fortifications. There are machinery, metal, and textile industries. Pop. 44,000.

Heidenstam, Carl Gustaf Verner von (1859–1940), Swedish poet and prose-writer, b. Olshammar. As a boy he had to travel for his health, and saw Greece and the E. At Rome he was for 2 years pupil to the Swedish painter Kronberg; he studied also at the Ecole des Beaux Arts, Paris. His verse, *Vallfart och vandringsår*, 1888, *Dikter*, 1895, and *Nya Dikter*, 1915, abounds in colour, exoticism, and *joie de vivre*, thus opposing Strindberg's Realism. He wrote only one book that can properly be called a novel—

Endymion, 1889, a story of the E. His famous *Karolínerna*, 1897-8, is a collection of tales about Charles XII. Some of his other works are: *Fran Col di Tenda till Hockeberg* (sketches), 1888, *Sankt Gören och Draken*, 1900, *Folke Fribyter* (peasant-legend), 1905, *Folkungatruddet* (historical stories), 1905-7, *Svenskarna och deras hödingar* (the Swedes and their chiefs), 1908-9, *När kastanjerna blommade* (memoirs), pub. 1941. His *Samlade verk* was ed. in 23 vols., 1943-5. See J. Landquist, *V. v. Heidenstam*, 1909; F. Bök, *V. v. Heidenstam*, 2 vols., 1945-6. He received the Nobel Prize in 1916.

Heifetz, Jascha (1901-), Polish violinist, b. Wilno, studied at the St Petersburg conservatoire, and made his first public appearance as a mature artist at the age of 12. He has played with phenomenal success in Europe and the U.S.A.

Heijermans, Herman (1864-1924), Dutch novelist and dramatist, b. Rotterdam. As a young man he was a frequent contributor to Amsterdam journals under the pseudonym of 'Samuel Falkland.' He subsequently made a marked success with realistic novels, as *Kamertjeszonde*, 1897, and *Diamantstad*, 1904, and with social dramas, notably *Ghetto*, 1899, *Het zevende Gebod*, 1900, *Op hoop van zegen*, 1901 (trans. as *The Good Hope*), and *Eva Bonheur*, 1919.

Heilbronn, Ger. tn in the *Land* of Baden-Württemberg (q.v.), on the Neckar (q.v.), 25 m. N. of Stuttgart. It is the chief tn of the Württemberg lowlands, and it has fine views of the Black Forest and the Vosges (q.v.). It was formerly a free city of the empire, and has associations with the Emperor Charles V, Götz von Berlichingen, Gustavus Adolphus, and Schiller (qq.v.). During the Second World War it fell to the Allies on 12 April 1945 after a defence of the tn which had lasted for a week. There are sev. old churches and towers, including the fine Renaissance *Kiliansturm*, and good modern buildings. It has manufs. of chemicals, machinery, tobacco, and food-stuffs, and is a port on the Rhine-Neckar canal. Julius von Mayer (q.v.) was b. here. Pop. 77,000. See Heinrich von Kleist, *Das Käthchen von Heilbronn*.

Heilsberg, see LIDZBARK WARMINSKI.

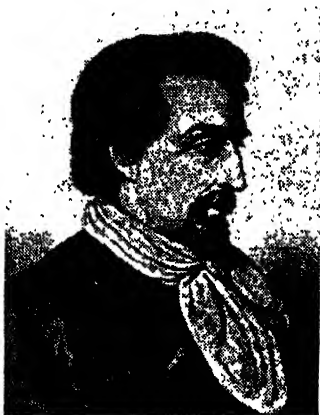
Heilsbrunn (also *Kloster-Heilsbrunn*), Ger. tn in the *Land* of Bavaria (q.v.), 90 m. NNW. of Munich (q.v.). The Romanesque basilica is part of a Cistercian abbey (1132-1578) founded by Bishop Otho (q.v.); sev. members of the Hohenzollern (q.v.) family are buried here. Pop. 3500.

Heilungkiang, prov. of Manchuria, containing 46 cos. with Harbin as cap. It is the northernmost prov. of China, separated from Russia by the Amur (H. R.). Its N. part is mainly occupied by the Great and Little Khingan mt ranges, with virgin forest estimated at 380,000 sq. m. Its S. part is the Nunkiang valley, known as the granary of the NE., but most of the fertile land is not cultivated. In 1955-6 a quarter of a million people from Shantung and Honan were resettled there

to reclaim lands. The most important products are timber, gold 3,500 oz. per annum, soya bean, maize, millet, rice, tobacco, and furs. Chief tns are Tsitsihar, Peian, Aigun, Nunkiang, and Hailar. Area 198,807 sq. m.; pop. 11,597,309 (1954).

Heimdallr, Norse god of light, who guarded the frontiers of Himinbjorg (heaven) and the rainbow-bridge (Bifrost) against the assaults of the giants. Like Oliver Höder of Teutonic myth, his hearing was so acute that he could hear the grass grow. Always in mortal feud with Loki for the recovery of Freyja's stolen necklace, ultimately they slew each other.

Heine, Heinrich (1797-1856), Ger. poet and journalist, of Jewish descent, b.



HEINRICH HEINE

Düsseldorf. He began life at Hamburg in the banking business of his uncle, Solomon H., with whose daughter Amalie he incidentally fell in love. On account of his failure in business, his uncle sent him to study law at Bonn (1819), where he gave signs of literary talent, A. W. von Schlegel being one of his earliest admirers and advisers. In the following year he left Bonn for Göttingen, but before long became entangled in a duel, and found it advisable to leave there also. Arriving in Berlin, he was soon an eager student of Hegel; his new environment and friends, including Fouqué, Rahel, Chamisso, and the Humboldts, stimulated his genius, and the 1st vol. of *Gedichte* appeared in 1821. Turning again to law for a while—for the poor success of his tragedies *Almansor* and *William Ratcliff*, 1823, had discouraged him—he graduated in 1825. The same year he spent a holiday in the Black Forest, thereby gaining the material for the 1st vol. of *Reisebilder*, 1826, which attracted much attention by its

originality and brilliance of style. Meanwhile, he had become baptised in the Christian faith, purely, however, for social purposes. The next few years were spent visiting London, Munich, and Italy; the remaining 3 vols. of *Reisebilder* were pub., and also the *Buch der Lieder*, 1827. After another visit to Berlin (1829) and a brief sojourn in Hamburg (1829-31), H. made Paris his home, quite severing his ties with Germany; and he only revisited it for short periods in 1843 and 1847. In Paris he was welcomed by the brilliant romantic circle of Hugo, George Sand, de Musset, Gautier, Sainte-Beuve, Chopin, Berlioz, and Delacroix; and he settled down to journalism and letters, *De l'Allemagne*, 1835, and *Die romantische Schule*, 1836, being his chief works of this period. He first met 'Mathilde' in 1834—Eugénie Mirat (d. 1883), a shop-assistant—first his mistress and subsequently (1841) his wife. Although it is hard to understand the fascination of a badly-educated, shallow-minded grisette for H.'s sensitive artistic soul, their mutual devotion was certainly unwavering. During H.'s early years in Paris his uncle had allowed him 4000 francs a year, but his growing separation from the Hamburg family made it necessary to look elsewhere for support, and from 1837 to 1848 he was in receipt of a pension of 4800 francs from the Fr. Gov. This was the last step in his absolute self-alienation from his compatriots; his writings had already been condemned by the Frankfurt Confederation Parliament (1835). *Der Salon* (4 vols.) appeared between this time and 1840, including his famous essays, 'German Philosophy and Literature,' written for the *Revue des Deux Mondes*. *Deutschland*, a political satire in verse, was pub. in 1844, and *Atta Troll*, 'the Swan song of Romanticism,' in 1847. From 1848 to 1856 H. was a victim to spinal disease, but through the agonies of this last long illness, during which Mathilde nursed him devotedly, he retained full control of his mental faculties, as his *Romanzero*, 1851, and *Neueste Gedichte*, 1853-4, bear witness. His Memoirs were probably destroyed; at any rate, they were withheld from pub. for family reasons, when in 1847 his Hamburg pension was restored; doubtful fragments were pub. in 1884, but their importance is as slender as their interest.

H.'s genius was moulded by his Ger. birth, Jewish descent, and Gk culture; Nietzsche wrote that H. and himself were the greatest literary artists Germany had ever produced. He was the *grand maître* of lyric expression; for his sense of the tragic and the beautiful was passionately intense. Gautier says that 'Heine combined the purest Greek form with the most exquisite modern inspiration; he was a true Euphorion, the child of Faust and lovely Helen.' His work is the emotional panorama of a soul almost neurotic in its exquisite sensitiveness, its keen appreciation both of beauty and ugliness, of joy and despair. And his style is equally nervous in his portrayal of them

both; on the one hand, the lyric-idealist, sometimes sentimental to a degree bordering on the ridiculous; on the other, the bitterly ironical cynic, often malicious in his satire, merciless and irreverent to the most sacred feelings of others. But, confining attention to broader issues, he was the first and greatest of a type of which, unfortunately, a mediocre multitude has since arisen: a self-centred, narrow soul, of artistic and irritable temperament, aiming at hedonism, fretting at the rein of reality, a poet of happy illusions that bring only sadness. Whilst expressing disfavour of Romanticism, he was one of its leading exponents; and while often coarse and brutal in his attitude towards love, he was yet conscious of the supreme poetry of passion. Indeed, it is as the poetic psychologist of love that H. is pre-eminent; his *Lyrisches Intermezzo*, 1823, and other poems have a wonderful fascination for translators, and have been set to music by nearly all the great song-writers—Schumann above all, Liszt, Rubinstein, Brahms, and Grieg. H.'s idealism towards life was a sanguine hope for the brilliant and glorious future of mankind—a future to be realised by fostering imagination and aesthetic culture.

A Fr. ed. of his works was pub. by H., de Nerval, and others (14 vols.), 1852-68; other eds.: (German) E. Elster (7 vols.), 1887-90, and O. Walzel (10 vols.), 1910-15; (Eng.) C. G. Leland (13 vols.), 1892-1905. See lives by M. J. Wolf, 1921; G. H. Atkins, 1929; M. Brod, 1934; L. Marcuse, 1951; also J. Weidekamp, *Traum und Wirklichkeit in der Romantik und bei Heine*, 1932; F. H. Wood, *Heine as a Centre of his own Work*, 1934; H. Spaeth, *La pensée de Heine*, 1946.

Heineccius, Johann Gottlieb (1681-1741), Ger. jurist, b. Eisenberg and educ. in theology and law at Leipzig and Halle. He was made prof. at Halle of philosophy (1713), and of law (1720). He then went as prof. of law to Franeker and to Frankfurt-on-Oder, but in 1733 returned to Halle, where he d. His works display great learning, especially in Rom. and Ger. law. The chief are: *Historia Juris Civilis Romani ac Germanici*, 1733, *Elementa Juris Germanici*, 1736, and *Elementa Juris Naturae et Gentium*, 1737 (trans. into Eng., 1763).

Heinemann, William (1863-1920), publisher, b. Surbiton, Surrey. He was the eldest son of Louis H., native of Hanover, and was educ. at Dresden and at home. He studied music in Germany, and acquired a taste for art. After gaining experience with Trübner of Ludgate Hill he founded, 1890, the publishing firm which still flourishes under his name.

Heinicke, Samuel (1729-90), founder of a deaf and dumb school in Germany. He was b. Nauteschütz, Germany, and fought in the Seven Years War, being taken prisoner at Pirna. He had previously supported himself by teaching, and had one deaf and dumb pupil in 1754. In 1768 he taught a deaf and dumb boy to talk, and 10 years later founded at Leipzig the first deaf and dumb institution

in Germany. He adopted the methods laid down in Amman's *Surdus loquens*. See H. E. Stötzner, *Samuel Heinicke*, 1870; and G. and P. Schumann, *Neue Beiträge zur Kenntnis Samuel Heineskes*, 1909.

Heinkel, Ernest (1888—), Ger. aircraft designer, b. Grünbach, Württemberg, who founded the H. aircraft works at Wassermünde in 1922, first developing service models of seaplanes, and later light, fast passenger aircraft. His twin engine bomber (He 111) and other types were used on a large scale by the Ger. Luftwaffe in the Second World War. H. has the unique distinction of having produced the first jet aircraft in the world to fly, the He 178, which flew in 1939. See **AKROPLANE**.

Heinrich von Meissen (c. 1260–1318), Ger. lyric poet and wandering singer, b. Meissen of humble burgher parentage. He is generally known by the name of Frauenlob, a nickname which may allude to his songs in praise of women, though some suggest that the reference is to his song, *Die Heilige Jungfrau*, or again to a song in which he defends the use of the word 'Frau' instead of 'Weib.' His youth was passed in straitened circumstances, but he gradually won a reputation as a singer at the courts of the Ger. princes. It is said of him that he founded the first school of Meistersingers at Mainz, where he d. The women of the city bore him to his grave in the cloisters of the cathedral and erected a monument, by Schwanthaler, to his memory. See F. H. von der Hagen's *Minnesinger*, vol. I, 1838; A. E. Kröger's Eng. trans. of his *Cantica Canticoorum*, 1877; H. Kissling, *Die Ethik Frauenlobs*, 1926; B. Nagel, *Frauenlob*, 1951.

Heinse, Johann Jakob Wilhelm (1749–1803), Ger. novelist and art critic, b. Langewiesen, Thuringia. He was a disciple of Wieland, and had some influence on Goethe. He studied art in Italy, where he also trans. Tasso's *Gerusalemme Liberata* and the *Orlando*. His masterpiece *Ardinghello*, 1787, contains remarkable digressions on the plastic arts, and another romance, *Hildegard von Hohenstahl*, 1796, gives his ideas on music. He served the elector of Mainz, and became state librarian. See J. Schober, *Heinse, sein Leben und Werk*, 1882; studies by A. Zippel, 1930; and A. Leitzmann, 1938.

Heinsius, Anthony (1641–1720), Dutch statesman and confidential agent of William of Orange, b. Delft. He studied law at Leyden. In 1688 he was grand pensionary of Holland and guided Dutch politics until his death. He was an implacable enemy of France, and after William's death was chiefly responsible for the alliance of 1702 against Louis XIV.

Heir. The H. in Eng. law was the person who took by descent (q.v.) the lands, tenements, and hereditaments (q.v.) of another, the ancestor. There were also H.s by custom, who were entitled by certain customary modes of descent to succeed to *customary freeholds*, a peculiar

species of copyhold tenure, which prevailed in the N. of England, and within manors of the tenure of *ancient demesne*, or tenure by copy of court roll, but not expressed to be at the will of the lord of the manor. As noticed in the article **INHERITANCE**, the H. was an uncertain person till the death of the ancestor, on the principle that no one is the H. of a living person. Before the ancestor's death, a person could only be an *heir-apparent*, i.e. one whose right was certain and indefeasible, provided he outlived the ancestor and the latter d. without making a will at all, or d. *intestate* as to some part of the real property; or an *heir-presumptive*, i.e. one who, if the ancestor should die immediately, would succeed as H., but whose right to succeed might be defeated by the contingency of a nearer H. being b.; e.g. an only daughter's presumptive right would be defeated by the birth of a son. (For the former rules of descent in Eng. law to real property, see **INHERITANCE**.) The old rule of primogeniture has disappeared, and with it the equally old institution of the H.-at-law; but for the purpose of tracing title to real property, it is still essential for lawyers to know the old law. The term H. is still used popularly to denote the H.s to the throne or to a title.

Heirloom (A.-S. *loom*, limb or member). H.s were those personal chattels which, by special custom, descended on death with the freehold lands of inheritance with the occupation of which they were connected; whereas ordinary chattels devolved on the executor for distribution amongst the next of kin. To-day such H.s are practically unknown, and the word is used popularly to denote pictures, furniture, jewels, etc., vested in trustees to hold for the person who for the time being is entitled to the possession of a settled home; they are known as settled chattels. By the Law of Property Act, 1925, the rules as to the settlement of real and personal property are assimilated. The former special devolution of H.s is indicated by the name itself, which, according to Blackstone, is derived from *loom*, a limb or member, and signifies a limb of the inheritance. Deer in a park, fish in a pond, doves in a dove-cot, accompany heritable lands, and, similarly, crown jewels are said to be H.s. Charters, court-rolls (evidences of title), deeds, and chests in which muniments of title were contained also passed as H.s, and also things affixed to the freehold in such a way that they could not be severed without damage, e.g. chimney-pieces, benches, etc. Monuments or tombstones in a church, and coat-armour, pinnons, and other insignia of honour of the ancestor which might be hung up in a church, formerly passed as H.s to his heir. H.s could not be devised by will away from the heir, but under the Settled Land Acts the court might sanction the sale (or purchase) of H.s.

Heisenberg, Werner Carl (1901—), Ger. physicist, b. Duisburg, studied at Munich with Sommerfeld. Prof. at Leipzig from 1927, director of the Kaiser Wilhelm Institute in Berlin, 1941, director of the

Max Planck Institute of Physics in Göttingen, 1945. He has made many important contributions in theoretical physics, notably matrix mechanics, 1925 H.'s Uncertainty Principle, 1927, quantum electrodynamics, 1929, and in ferromagnetism, 1933. He was awarded the Nobel prize in 1932. In 1958 H. announced the discovery of a unified field theory predicted by Einstein (q.v.).

Heist (Heist-san-Zee), watering place in the prov. of W. Flanders, Belgium, on the North Sea. It lies 9 m. NE. of Bruges, with which it is connected by a steam tramway and by rail. The tn is attractive and possesses a picturesque harbour. During the First World War the sandbanks of H. held an important Ger. coastal battery. Pop. 8000.

Heist-op-den-Berg, tn in Belgium, 17 m. SE. of Antwerp, with a Gothic church dating from the 14th cent. Pop. 12,000.

Hejaz (Arabic 'barrier', because it separates the coastal plain from Nejd, q.v.) extends along the E. coast of the Red Sea from the Gulf of Aqabah to near Lith, being bounded on the N. by Jordan, on the E. by Nejd, and on the S. by Asir (q.v.). Its length is 750 m., its greatest width 120 m., and the coast-line 800 m. The area is about 112,000 sq. m. Arab custom and religious usage put the N. boundary further S. on a line from Wejh to Khaibar. The W. mts, the Sarat, run the length of H. The pop. is about 1,250,000 and in the tns is very mixed. The chief tns are Mecca (q.v.), Medina (q.v.), Jiddah (q.v.), and Taif (pop. 30,000), the summer resort of rich Meccans. The chief products are dates, hides, honey, wool, and ghee. Jiddah does a fair trade in hides, coffee, mother-of-pearl, and carpets, but the products are mostly for home use. The main source of income is the pilgrimage (140,000 in a recent year), and after that dates; perhaps now H. shares in the wealth that comes from oil in the E. The pilgrim railway used to run from Damascus to Medina, but since 1918 it has stopped at Ma'an. There is a road from Jiddah through Mecca to Riyadh, and one from Mecca to Medina has been started. Airports are at Jiddah, Medina, and Taif. Small ports are Wejh, Yanbu, Rabigh, and Qunfuda. The oasis of Khaibar has a large pop. consisting of the descendants of negro slaves. For the hist. see ARABIA and SA'UD, IBN. H. is now one of the 2 great divs. of Saudi Arabia and is governed by a viceroy; the sacred law of Islam is the law of the land and is administered by judges (cadi) under a chief judge in Mecca. None but Muslims is allowed to enter the 2 holy cities and till recently the same restriction applied, though less strictly, to all H. in the narrower sense of the name. See J. F. Keane, *Six Months in the Hedjaz*, 1887.

Hejira (Hejra, Hegira, Arabic *hijra*, departure), the flight of Mohammed from Mecca in Sept. AD 622. The caliph Umar instituted the Muslim era (perhaps in 638), keeping the Arabian months, and made it begin with the 1st month of the

year in which the flight took place, 16 July 622. The Muslim year of 12 lunar months is 11 days shorter than the solar year; to convert one era into the other use the formula:

$$A.H. - \frac{3.A.H.}{100} + 621 = A.D.$$

In a metaphorical sense *hijra* is abandoning one's ordinary life for a religious life.

Hekla, or **Hecla**, volcanic mt in Iceland, 68 m. E. of Reykjavik. Elevation 4747 ft. There have been 23 eruptions since the 9th cent., the last in 1947. By the outbreak of 1845, fine lava ashes and dust were scattered as far as the Orkney Is., 500 m. away. The next eruption, of 29 Mar. 1947, was preceded by an earthquake and showered dust on Copenhagen, 1250 m. away. See *The Eruption of Hekla 1947-48*, ed. by T. Einarsson, G. Klartansson, and S. Thorarinnsson (Reykjavik), 1950 and ff.

Hel, or **Hela**, daughter of Loki and of the giantess Angervboda, was the Scandinavian goddess of the dead, and lived below the roots of the sacred ash Yggdrasil. She ruled the 9 worlds of Helheim, abode of the dead, and of the old and sick.

Helbold, see ALEPPO.

Helder, or **Den Helder**, seaport of the N. extremity of the prov. of North Holland, Netherlands, situated on the North Sea. It is separated from the is. of Texel by the Marsdiep. There is an excellent harbour at Nieuwe Diep, the E. side of the tn, and there are fine embankments. The great H. Dyke, constructed of Norwegian granite, is 5 m. long and there is a good road along the top of it. It is an important naval and military station. H. has also an observatory, lighthouse, zoological station, and tn hall. Formerly a simple fishing vil., it was fortified by Napoleon in 1811. The Dutch fleet, under de Ruyter and Tromp, defeated the Eng. off the coast in 1673. H. may be said to have marked the Dutch or N. end of the constant blockade which Allied naval forces maintained without interruption throughout the Second World War from the Biscay and Channel coasts, from the Gironde to H. Pop. 52,700.

Helen, **Helena**, heroine of the Trojan war and the most beautiful of women, was the daughter of Zeus and Leda, and sister of Castor and Pollux. Carried off by Theseus to Attica, she was rescued by her twin brothers. She chose Menelaus out of many suitors, but subsequently deserted him and fled with Paris (q.v.) to Troy. The Trojan war, which followed, lasted for 10 years. At the death of Paris she married his brother Deiphobus, whom she later betrayed, returning with Menelaus to Sparta. According to one tradition, at his death she married Achilles and lived with him in Leuce.

Helena, St. (c. 250-c. 330), a native of Bithynia, wife of Constantine Chlorus, and mother of Constantine the Great. She became a Christian after the Edict of Milan (313), and spent the remainder of

her life between Rome and the Holy Land. She is famous chiefly for having rediscovered the Cross of our Lord at Jerusalem (326). Her feast is on 18 Aug.

Helena (d. AD 359), daughter of Constantine the Great and Fausta. She married her cousin Julian, whom her brother, Constantius II, made Caesar at Milan (355). Her only son was supposed to have been killed at birth through the instigation of the Empress Eusebia.

Helena: 1. Co. seat of Phillips co., Arkansas, U.S.A., situated on the Mississippi at the foot of Crowley's Ridge, 50 m. SW. of Memphis, Tennessee. It is served by 3 railways and is a port of entry and the head of navigation for ocean steamers. It has a busy trade in cottonseed products and lumber, and manufactures hosiery, lard, veneers, and fertiliser. Pop. 11,236.

2. Cap. of Montana and of Lewis and Clarke co., U.S.A., situated at an elevation of 4000 ft on the Rocky Mts, 50 m. NE. of Butte. It is a large commercial centre in a rich mining and agric. region, with gold mines. Concrete products, bricks, and tiles, flour, grain, and potatoes are produced. Carroll College and 2 cathedrals (Rom. Catholic and Episcopalian) are here. Pop. 17,581.

Helenium, a genus of ann. or perennial herbs, native to North and Central America, family Compositae, about 30 species; *H. autumnale*, Sneezeweed, is valued for gardens.

Helensburgh, police burgh and holiday resort of Dunbartonshire, Scotland, 23½ m. NW. of Glasgow, on the Firth of Clyde at the mouth of the Gareloch. H. is a well-laid-out modern tn, a centre for excursions, and is famous as the bp. of steam navigation in Europe. The hotel built by Henry Bell (q.v.), owner of the *Comet*, the first European steamship, is still a residence for visitors. St Bride's girls' school was founded in 1895. Pop. 8760.

Helenus, Gk soothsayer, son of Priam and Hecuba, who foretold the fall of Troy, and after the siege saved the life of Pyrrhus by warning him not to go home by sea. He accompanied Pyrrhus to Epirus, where he ruled. After the death of Pyrrhus H. received a part of that country and married Hector's widow Andromache.

Helford River, Cornwall, England, rises 4 m. W. of Penryn and flows into the Eng. Channel between Rosemullion Head and Nare Point. Frenchman's Creek is a famous beauty spot on the S. side of the riv.

Helgason, Jón: 1. (1866–1942) Bishop of Iceland, church historian, and biographer. His *History of the Icelandic Church* (2 vols.), of which he also made a Dan. version, is the most up-to-date work in that field. See P. E. Ólason, *Íslenskar æviskrár*, vol. v.

2. (1899–) Icelandic philologist, antiquarian, and poet; prof. of Icelandic literature in the univ. of Copenhagen. His numerous eds. of Old Icelandic and medieval works are among the best that have been made.

Heligoland, see HELIGOLAND.

Heliade-Rădulescu, see ELIADE-RĂDULESCU, IOAN.

Helland, The (O.E. *Hælend*, Saviour), 8th-cent. Old Saxon poem of the life of Christ. The best texts are the Cotton MS. in the Brit. Museum and the Munich MS., which are printed side by side in Siever's ed., 1877. From internal evidence modern scholars have concluded that it was written by the author of the fragments of a version of the story of Genesis which, with the H., is all that survives of Old Saxon poetic literature.

Hellianthemum, a genus of ann. and herbaceous perennials and shrubs, family Cistaceae, about 100 species. Shrub species much esteemed for rock gardens.

Hellianthus, see JERUSALEM ARTICHOKE and SUNFLOWER.

Hellechrysium, a genus of ann. and perennial herbs and shrubs of over 300 species, widely distributed in sub-tropical and temperate region, family Compositae. Flowers are often dried as 'everlastings' or 'Immortelles.'

Helicon, mt range in Boeotia, Greece, situated between the Gulf of Corinth and Lake Copais. It is celebrated in classical literature as the abode of the Muses; near by were the fountains, Aganippe and Hippocrene, which were said to give poetic inspiration. The W. summit, Palaeovouno, rises to 5735 ft; the E. summit is called Zagora.

Helicopter, see ROTATING WING AIRCRAFT.

Heligoland (Ger. *Helgoland*), Ger. is. in the *Land* of Schleswig-Holstein (q.v.). It is in the H. Bight (q.v.), 42 m. NW. by W. of Cuxhaven (q.v.) and 30 m. from the nearest point on the Ger. mainland. It was a Brit. possession 1807–90, and was ceded to Germany in 1890 in return for concessions in East Africa. The is. is 1 m. long, its greatest breadth is less than a 3rd of a m., and its area is 130 ac. It is a popular bathing resort. H. is a rocky plateau, with a sand bank, the Düsen-Insel, off the E. coast. On 3 sides the is. rises nearly perpendicularly from the sea, forming a grass-covered triangle called the Oberland. In accordance with the treaty of Versailles (q.v.), the fortifications, military establs., and part of the naval harbour were, or were supposed to have been, razed. But the 12-in. guns of the Schroeder Battery came out of the old battle cruiser *Derfflinger*, which was also supposed to have been demolished with her armament. H. provided one typical instance of the cursory way in which the disarmament of Germany was conducted after the First World War. Many of the tunnels were bricked up across the entrances by the Germans and faced with carefully selected blocks of red sandstone of the cliffs, so that they were well camouflaged. When the Disarmament Commission inspected H. they saw only the tunnels which had been there before 1914. Afterwards the tunnels were opened up, being filled with secret equipment which was hidden from the Allies. Hitler (q.v.) re-fortified H. intensively. During the

Second World War the is. was bombed by the R.A.F. in a successful daylight attack on 14 May 1941, the defences being taken by surprise. In May 1945 the Brit. White Ensign was hoisted on H.; most of the armament of the fortress had by then been destroyed, and only the labyrinth of underground workings (some 8½ m. in extent) remained. The lowest tunnels, which had been constructed when H. was a Brit. possession, were lined with Eng. brick; the Ger.-built tunnels were lined with concrete, the most modern of them having been made in 1940 by 25,000 conscripted labourers. The U-boat (see SUBMARINES) pens, which had been often hit by bombs, had only been chipped, and the power station was protected by a great concrete bunker under the cliff. During a heavy raid just before the Ger. surrender, the old tn on the Oberland, and the residential quarters below, had been obliterated. The remaining fortifications were destroyed by the R.N. on 18 April 1947 by the detonation of 6700 tons of explosives in the underground chambers, and the is. was used by the R.A.F. for bombing practice until 1952, when it was returned to the Germans.

Heligoland Bight (Ger. *Helgoländer Bucht*), bay in the North Sea, between Heligoland (q.v.) and the mouths of the R.s Elbe and Weser (qq.v.).

Heligoland Bight, Battle of. Heligoland Bight is that area of sea about the is. of Heligoland off the NW. coast of Germany. The W. end of the Kiel canal enters the mouth of the R. Elbe, which empties into the Bight. The area was therefore one of great Ger. naval activity during the First World War. Immediately war had been declared, Brit. submarines kept a perpetual watch upon Ger. shipping here, venturing far into the protected area and noting the routine of the various units of the fleet. It was therefore arranged to make a sweep of the Bight in the early hrs of 28 Aug. 1914, by the light cruiser force at Harwich under the command of Commodore Sir Reginald Tyrwhitt. The Bight was defended by 3 lines of warships. Before dawn on the appointed day Tyrwhitt's force was approaching its objective, and immediately it was sighted by the Ger. ships they scuttled back to the shelter of Heligoland at top speed, without trying conclusions with their opponents. The day was misty, and this favoured them. One Ger. destroyer which failed to regain Heligoland was sunk. After this first brush the Ger. cruisers began to come out and look for their opponents. The Ger. *Mains* put up a good fight before she was sunk. She had become detached and could get no support. Adm. Beatty with his battle cruiser squadron now entered the battle, and immediately the Ger. cruisers turned to run to safety, but they were too late, and the *Ariadne* was sunk, and a little later the *Köln* met the same fate.

Heliodorus (fl. 3rd cent. AD), Gk writer, b. Emesa in Syria. His *Aethiopica* in 10 books is the longest of the Gk romances.

It was popular among the Byzantines, who recognised its psychological insight and narrative skill. There is an Eng. trans. by T. Underdowne, 1587, revised by F. A. Wright, 1923.

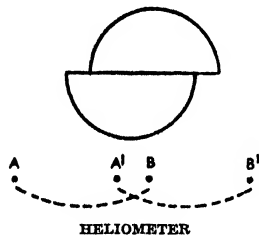
Heliogabalus, see ELAGABALUS.

Heliograph, instrument for signalling between 2 distant points, by flashing the sun's rays from the face of a mirror. The H. is fitted with a spring device and can be made to transmit long or short flashes. The Morse (q.v.) code is normally used.

The mirror, from which a part of the mercury back has been removed, is mounted on a tripod and 2 sights are provided in front. The sun's ray is then directed through both sights, and the flash can be seen at a distance of up to 200 m., the range of the H. flash depending upon the size of the mirror. If the mirror is directed at exactly the required spot, its flashes cannot be read at a distance of more than 10 yds on either side of the receiver at 1 m., or more than 50 yds at 2 m.

Heliogravure, see PHOTOGRAVURE.

Heliometer, astronomical instrument for measuring the diameters of celestial



bodies or their distances from one another. It was invented by Fraunhofer in 1814 and, as its name indicates, was first used to obtain solar measurements. The H. is an equatorially mounted telescope with its object-glass divided into 2 movable halves (as shown in diagram). The largest H. is an 8½ in. at the Vienna Observatory (Küffer). Directions for use are thus given in the manual *Astronomy* by Sir F. W. Dyson, F.R.S. 'If,' he says, 'two stars are looked at, and the glass is turned so that the direction in which the halves are separated is parallel to the line joining the stars, there will be seen, as in the diagram, four images in a straight line, viz. *A* and *B*, the images of the two stars formed by one half of the glass, and *A'* *B'*, the images formed by the other half. The halves of the glass are separated by a distance *AA'* or *BB'*. If they are now still further separated till *A'* coincides exactly with *B*, the distance between the stars is exactly equal to the amount by which the two halves of the glass are separated.'

Heliopolis (the city of the sun): 1. Another city of Egypt, called in the Bible On. It

stood 5 m. E. of the Nile at the apex of the Delta. It was the chief seat of sun worship, and was famous for its schools of philosophy and astronomy. The site of the anct temple is marked by a red granite obelisk (q.v.). A short distance from the ruins of the anct city stands New H. It was founded in 1906 by a Belgian Co. It is in a healthy situation and is well laid out with broad streets and squares. It has churches, mosques, a sporting club and swimming bath, a racing course and club. There is a fine aerodrome. A railway is projected from New H. to Suez. Pop. 23,000.

2. The Gk name for Baalbek (q.v.).

Helios, Gk god of the sun, the Rom. Sol. He was the son of Hyperion and Thea and the brother of Selene and Eos. Homer (*Odyssey*, viii) describes him as a god who rises from Oceanus in the E., traverses the heavens, seeing and hearing everything on his way, and descends to Oceanus in the W. Later writers tell of a magnificent palace in the E. from which he comes forth in a fiery chariot drawn by 4 horses, and of another palace in the W. His horses grazed on the Is. of the Blessed. The Is. of Thrinacia was sacred to him; there his daughters Phaetusa and Lampeta tended his flocks. He was worshipped throughout Greece and in Rhodes, where the Colossus was erected to him. He was identified with Apollo and was also later associated with Mithras (q.v.).

Heliostat, see **SIDEROSTAT**.

Heliotherapy, see **SUNLIGHT TREATMENT**.

Heliotrope, or **Bloodstone**, a dark green chalcedony with scattered spots of red jasper (q.v.).

Heliotrope and **Turnsole** are popular names applied to sev. species of *Heliotropium* (q.v.). The H. plant most commonly cultivated in Britain is *H. peruvianum*. Winter H. is a common name of *Petasites fragrans*, a sweet-smelling species of Compositae.

Heliotropism, see **PHOTOTROPISM**.

Heliotropium, family Boraginaceae, genus of herbs and shrubs of warm regions of the world. The plants chiefly grown are derived from *H. peruvianum*, Peruvian Heliotrope, Turnsole, or Cherry Pie, and *H. corymbosum*, both of Peru, and parents of hybrids cultivated under glass in Britain for their fragrant flowers.

Helio-type, process connected with photography and printing. In the development of a negative, the effect of light and shade is obtained by burning away the gelatine in places, and thus causing a relief effect. By using this fact and printing from a suitable form of press, prints can be obtained from the actual gelatine surface, without covering it with tin-foil as is done in the case of Stannatype.

Heliozoa, name given to a group of Protozoa commonly called the sun-animalcules. Some have no skeleton, and in some cases a gelatinous membrane. H. include Chlamydomphora, which have al-

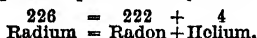
ways a gelatinous envelope; Chalarothoraca, which have a skeleton of silicious spicules; and Desmothoraca, which have a stalked or unstalked shell with numerous pores. H. are widely distributed, and are both freshwater and marine.

Helipterum, see **RHODANTHE**.

Helium (Gk *Helios*, the sun), an inactive gaseous element. Lockyer observed in 1868 a bright yellow line in the spectrum of the solar chromosphere close to but not identical in position with the D line of sodium. He ascribed it to a hypothetical element *helium*. Hillebrand had noticed that an inert gas was evolved when the mineral cleveite was treated with acid. Ramsay, repeating these experiments, found that the inert gas refused to combine with oxygen, and on submitting it to Sir Wm Crookes for spectroscopic examination the spectrum was found to be characterised by a bright yellow line coinciding with the new line discovered by Lockyer in the solar spectrum. The name H. was, therefore, adopted for the new gas. H. is abundant in many minerals, all of which contain uranium and barium as important constituents. The richest known mineral source is thorianite, which is mainly thorium oxide, and contains about 9.5 c.c. per grain. H. is also present in the gases which escape from the water of hot springs and in the atmosphere, of which it constitutes 4 parts in a million. To prepare H. from thorianite, the mineral is treated with nitric acid, when the H. is liberated together with hydrogen, oxides of carbon, and a trace of nitrogen. The hydrogen is removed by sparking the mixture with oxygen, and the remaining impurities are removed by Dewar's method of absorption with charcoal cooled in liquid air. The H. alone is unabsorbed by the charcoal, and it can be pumped off in a state of perfect purity. The prin. source of H. is the natural gas (mostly consisting of methane) issuing from petroleum wells in certain parts of the U.S.A. and in Canada (Medicine Hat).

Properties.—It is chemically inert. Its density is 1.98, referred to hydrogen as 1. The ratio of its specific heats is 1.66, so that its molecules are monatomic. The atomic weight is, therefore, double the density, i.e. almost 4. Its solubility in water is less than that of any known gas. It approximates more closely to the ideal gas than hydrogen. In 1908 Kamerlingh Onnes of Leyden Univ. succeeded in liquefying it. Its boiling point is 4.2° abs., the density of the liquid is .154, and its critical temp. is 5° abs. There are 2 forms of liquid H., Helium I and Helium II. They have a transition point and differ in certain of their physical properties. Solid H. was obtained by Keesom in 1926 by compressing liquid H. at the lowest temps. available. The α -particle expelled by radium, thorium, uranium, and actinium is identical with the atom of H. This conclusion is based on the following experimental evidence: (1) All α -particles have the same mass and differ only in their velocity of expulsion. This mass has

been measured, and has been found to be the same as the mass of the H. atom. (2) The 'emanation' from radium which expels α -particles (radon) was stored in a thin-walled but perfectly gas-tight glass tube, enclosed within a wider vessel. After some days the gas in the outer vessel was found to contain H. It was proved that when H. was stored in the inner tube, none passed through the glass into the outer vessel. In this experiment the velocity of expulsion of the α -particle was so great that the particle could get through thin glass. When it was brought to comparative rest in the space surrounding the thin glass vessel, its properties were identical with those of the atom of H. There is a good deal of evidence that 1 atom of a radio-active substance expels but 1 α -particle at each disintegration. Hence the change from radium to H. may be expressed quantitatively thus:



The numbers denote the atomic weights.

The atomic number of H. is 2. Its atom is next to that of hydrogen in simplicity of structure, its nucleus consisting of 2 protons and 2 neutrons; the revolving or orbital electrons are thus 2 in number.

H. had at one time considerable commercial importance as a gas for filling airships. It has not quite so much lifting power as hydrogen, but possesses the inestimable advantage of being completely non-inflammable. For commercial purposes H. is obtained from natural gas that issues from the earth in Kansas and other dists. of the North Amer. continent (see above). The gas after purification is liquefied as far as is necessary to condense all the constituents except H.; it is then drawn off and stored. Millions of cub. ft of H. can thus be obtained per annum at a very reasonable cost.

H. is the lowest member of the group of 'rare,' 'noble,' or inactive gases. See INERT GASES.

Helix, the snail, typical genus of *Helicidae*, which contains sev. thousand species; *H. hortensis* is the common European snail, and *H. pomatia*, also found in England, is called the Rom. snail.

Hell, now the name of the place of eternal punishment, but formerly, as in the A.V., the Eng. rendering of sev. Heb. and Gk words with distinct connotations. These words are the Heb. *Sheol*, and *Gehenna*, and the Gk *Hades* and *Tartarus*; *Hades* roughly corresponds with *Sheol*, *Tartarus* with *Gehenna*. (1) *Sheol*. It is this that the Creeds refer to in the article, 'He descended into Hell.' It is, simply, the place of departed souls, neither heaven nor H. (in the modern sense), described by Jesus as Paradise (in view of His coming entry into it, Luke xxiii. 43) and by 1 Pet. iii. 19 as Prison, before the liberating visit of Christ. The Heb. conception of *Sheol*, trans. also in the A.V. sometimes as 'grave' and three times as 'pit,' is well represented in Ps. xxxi. and

lxxxviii. as a region cut off from the light of the presence of Yahweh. Sometimes the dead are here regarded as cognizant of earthly affairs, sometimes as totally ignorant of them. According to the former and earlier view, the dead retain their self-consciousness, and *Sheol* is a shadowy reproduction of the earthly life. According to a later view (Job vii., xiv., and xxvi.) *Sheol* is equivalent to utter destruction. It is the land of sleep, of utter forgetfulness, and silence. The dead are ignorant of what passes on earth, and are unable to affect its affairs. Eccles. ix. 5 and 10 insist that all knowledge has forsaken the dead. Considerable development is seen, however, in the post-exilic writings, and the doctrine of the resurrection (q.v.) is revealed.

(2) *Gehenna*. This is originally the name of the Valley of the Sons of Hinnom, near Jerusalem. Used for human sacrifice to Moloch, under the later kings, it was defiled and turned into a smoldering and rotting rubbish dump, providing vivid imagery for the conception, estab. by the 2nd cent. AD, of a place of final punishment for the wicked. *Sheol* is now only an intermediate state for both righteous and wicked, divided into 4 parts, 2 for the wicked, 2 for the righteous. In the N.T., accordingly, Hades is used for the place of departed spirits, *Gehenna* for that of endless (*aiōnios*) punishment for the wicked. Tartarus occurs once (2 Pet. ii. 4) as the abode of the fallen angels. There has been much controversy as to whether the Gk adjective *aiōnios* is equivalent to eternal in the modern sense of the term, that is to say, never-ending. The noun *aiōn* is frequently used for a long 'period of time,' and Origen held the unorthodox opinion that ultimately the punishment of the most wicked and even of the devils would have an end, and that thus all would be saved. This view has been condemned in the Rom. Catholic Church; the endlessness of H. is also affirmed by the Orthodox and by the Protestant Divines. Indeed it is hard to equate the other view with such passages as Matt. ix. 42, Mark v. 30, and Rev. xx. 10. The punishment of the wicked is exactly equated with the blessed reward of the righteous. Eternity, if that sense of the Greek is insisted on, is a concept that admits of no change. The orthodox doctrine, however, does admit the possibility of a gradual alleviation and mitigation of the condition of the lost. Furthermore, despite the existence of H. as a possible fate for man, no one is able to anticipate the judgment of God and assert that any particular person will in fact suffer it.

Hell, railway junction in the prov. of Nord Trøndelag, Norway. It is situated on the Trondheim Fjord, 20 m. from Trondheim and on the railway from Oslo to N. Norway and from Trondheim to Sweden.

Hell, Die, valley in the Swartberg (Black Mts) of Cape Province (q.v.), South Africa, inhabited by a farming community of 90 people, descendants of

Huguenots who fled from France after the revocation of the edict of Nantes in 1685. The towering rock wall of the Swartberg shuts them off from the world and they have no radio, no newspapers, no telephones, and because of the lack of roads they are beyond the reach of any wheeled vehicle.

Hell Fire Club, see MEDMENHAM.

Hell Gate, narrow channel of East R., SE. New York, N. of Welfare Is. and between Wards Is. and Astoria, Queens. It is spanned by Triborough Bridge and H. G. railroad bridge (1917), a connecting link for trains from N. to S. It was named Hellogat by Adriaen Block in 1614. John Newton (1823-95) was the engineer who, at the instance of the Federal Gov., conducted the blasting operations in 1885, which removed the dangerous rocks and deepened the channel.

Hellah, see HILLAH.

Hellanicus (c. 480-c. 400 BC). Gk historian, b. Mitylene in Lesbos. Chief among his writings, which were probably consulted by Thucydides, were chronological works on the victors at the Spartan Carneia and on the priestesses of Hera at Argos. See F. Jacoby, *Fragmente der griechischen Historiker*, vol. i, 1923; L. Pearson, *Early Ionian Historians*, 1939.

Hellas, dist. of S. Thessaly, often identified with Phthiotis. The Greeks, who called themselves Hellenes, after their mythical founder Hellen, son of Deucalion and Pyrrha, came to use H. to denote all the lands on which they settled.

Hellbender, see MENOPOME.

Helle with Phirixus, her brother, fled on the golden-fleeced ram from her stepmother, Ino. She fell into the strait called (after her) the Hellespont and was drowned.

Hellebore, popular name of species of the ranunculoid genus *Helleborus*, of S. Europe and W. Asia. At one time employed in medicine for their stimulating properties; in large doses they act as a fatal poison. *H. viridus*, the green H., and *H. foetidus*, Bear's foot (q.v.), are indigenous to Britain. *H. niger*, the Christmas rose (q.v.), has white flowers which turn green after fertilisation. *H. guttatus* is a Caucasian parent of sev. good hybrids; *H. orientalis* is an evergreen from Asia Minor. Of the Liliaceae, *Veratrum album* is known as the white H. root.

Hellebore, False, see VERATRUM.

Hellefors, com. and tn of Sweden in the prov. of Orebro. Pop. 6115.

Hellen, legendary son of Deucalion and Pyrrha. He ruled over Phthiotis and gave his subjects the name of Hellenes. His sons, Aelius, Dorus, and Xuthus (through his adopted son, Ion), gave their names to the Aeolians, Dorians, and Ionians.

Hellenism (Gk *hellenizein*, to speak the language of the Greeks). This term, though its meaning is fairly well estab. by common usage, is in itself ambiguous. In very late Gk literature, with special reference to the Jews (e.g. in the

Septuagint and the Book of Maccabees), it implies the adoption not only of the Gk language but also of Gk manners. Elsewhere it denotes the anct Gk culture in all its phases; for long before the 4th cent. BC it is possible to detect Gk influence in many parts of the world from Spain to S. Russia, from Gaul to the Carthaginian ters. of North Africa. However, the term H., as applied by the Ger. historian Droysen, has come to be used most commonly of the later stages of Gk culture, from the date of Alexander's conquests to the final passing of the anct world. During that period a large majority of those who were influenced by Gk culture were people who, though non-Greek by birth, had adopted the Gk language and way of life. The prin. centre of such influence was the city of Alexandria (q.v.), which affected the whole of the known world from W. Europe to India. See J. B. Bury and others, *The Hellenistic Age*, 1923; W. W. Tarn, *Hellenistic Civilization*, 1927; M. Rostovtzeff, *Social and Economic History of the Hellenistic World*, 1941.

Hellenists, term applicable, with the same ambiguity as explained in the article Hellenism (q.v.), to those people of Europe and Asia who at various times and in varying degrees were influenced by Gk culture.

Heller, Stephen (1814-88), Hungarian pianist and composer, b. Pest. At the age of 9 he caused some sensation as a boy pianist. He studied in Paris, and became one of the set of which Chopin, Liszt, and Hallé were prominent members. He wrote entirely for the pianoforte, except 2 works with violin in collaboration with H. W. Ernst, and achieved an individual style of great lyrical charm. See life by H. Barbedette, 1876.

Helles, Cape, at the S. end of Gallipoli, near the entrance to the Dardanelles. Here Anzac troops were first landed at the beginning of the Gallipoli campaign in the First World War (see GALLIPOLI CAMPAIGN).

Hellespont, see DARDANELLES.

Hellin (Rom. Lunum), Sp. tn in the prov. of Albacete. It is famous for its caranels, has sulphur mines, and thermal springs which were known to the Romans. Pop. 15,000.

Hellovo, see OTHYRS.

Helm Wind, wind which, under certain conditions, blows over the escarpment of the Pennines, near Cross Fell, from the eastward, when a helm (helmet) cloud covers the summit. The helm bar is a roll of cloud that forms in front of it to leeward.

Helmand, or **Helمند**, see HELMUND.

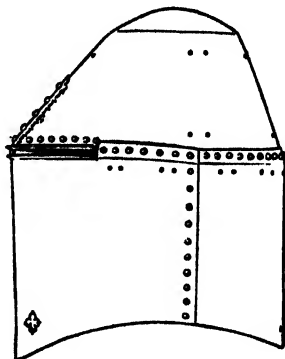
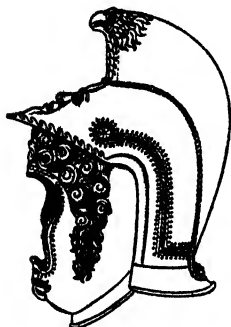
Helmantica, see SALAMANCA.

Helmbsrechts, Ger. tn in the Land of Bavaria (q.v.), 145 m. N. of Munich (q.v.). It has a hand-weaving industry. Pop. 8600.

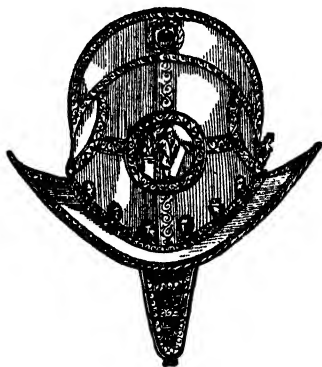
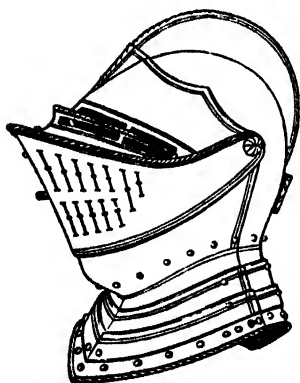
Helmet, protective covering for the head. The vulnerability of the head made its protection important. With the discovery of the malleability of metal it was possible to make a head covering

conforming to the shape of the head. The H.s of ancient times were often highly decorated, being made of bronze embossed, inlaid, and decorated with dyed horsehair. In the Middle Ages the Normans wore a small conical H. with a

sallet. During the 15th cent. the Italians developed the first close-H., being a H. which covered the whole head and instead of being over it, clasped round it by an ingenious system of hinges and fastenings. This became the H. of



Left: Roman Cassis 2nd century AD. Frankfurt Museum. Right: Helm of Edward, prince of Wales, c. 1360. Canterbury Cathedral.



Left: Close helmet, Greenwich School, English, c. 1580. Glasgow Corporation Museum. Right: Morion. German, Saxon, c. 1590.

nasal which gave some protection to the face. In the latter part of the 15th cent. the great helm was developed which covered the head and face, with horizontal slits in the front for vision. The great helm had its disadvantages, being cumbersome and limiting the sight, and though it remained in use as an essential part of the equipment for tournaments, it was replaced by the bascinet (q.v.) with a movable visor, and this in turn by the

heavy cavalry of the 16th cent. With the gradual disuse of plate armour, H.s became lighter and open faced, visibility being regarded as more important than impregnability. The metal H.s were retained for cavalry long after they had been abandoned for the infantry. They returned to use for the protection of the troops in the trenches during the First World War and have remained ever since in various forms. The H. of Persia and

India generally has a spike on top and a mail curtain protecting the neck, and 3 plume-holders. The Jap. H. is large with a big spreading collar and often a mask to cover the face. There are countless other forms of H. for civilian use, such as the fireman's H., formerly made of brass, and the H. of the miner and the sapper for protection from falling stones; a small framework of iron was sometimes placed inside the felt hat of the cavalry of the 17th cent. for defensive purposes. H.s have always lent themselves to plumes, and in the Middle Ages to heraldic devices known as crests, giving height to the wearer and an impressive appearance. See ARMOUR.

Helmet-shell, name given to members of the genus *Cassia*, gastropod molluscs belonging to the family Cassididae, found in tropical seas and the Mediterranean. They resemble whelks in appearance, having thick heavy shells with prominent edges; some species attain considerable size, and, as they are composed of differently coloured layers, they are much used in the manuf. of cameos. *C. madagascariensis* is the largest of these, and *C. rufa* and *C. cornuta* are also commonly used.

Helmholtz, Hermann Ludwig Ferdinand von (1821-94), Ger. physician and scientist, b. Potsdam, of mixed Ger., Fr., and Eng. descent. His father was a teacher of philology and philosophy at the gymnastium, his mother a lineal descendant of Wm Penn the Quaker. H. was a precocious child; he wished to study physics but his slender financial resources led to his taking up medicine. After study at Berlin he received his degree in 1842 with a thesis describing his discovery of nerve cells in ganglia. In 1847 he read before the Berlin Physical Society his famous essay *Ueber die Erhaltung der Kraft*, an epoch-making paper which led to the acceptance of the fundamental physical doctrine of the conservation of energy. Next year he showed that muscle was the prin. source of animal heat, and in 1850 he succeeded in measuring the velocity of the nervous impulse. Meanwhile, having served for a short time as a Prussian army surgeon, he secured a post to teach anatomy and physiology in Berlin. In 1849 he was appointed prof. of physiology and pathology at Königsberg Univ. In 1851 came another great contribution—the invention of the ophthalmoscope. He pub. his theory of colour vision in 1852. H. went to Bonn as prof. of physiology in 1856, and 3 years later to Heidelberg where he continued his studies on sound and pub. *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik*, 1863, his theory of hearing upon which all modern theories of resonance are based. In 1867 he pub. his classical *Handbuch der physiologischen Optik*, which includes his revival of the Young theory of colour vision (see THOMAS YOUNG), since known as the Young-Helmholtz theory. H. was called to the chair of physics at Berlin in 1871, thus realising his youthful ambition

to become a physicist. He was a man of great intelligence, courteous in manner, with personal charm and nobility of character. His scientific achievements rank him as one of the greatest minds of the last cent. See lives by J. C. McKendrick, 1899, and L. Koenigsberger, 1906.

Helmond, tn in the prov. of N. Brabant, Netherlands, 8 m. ENE. of Eindhoven. The chief industries are textiles and machines. Pop. 39,350.

Helmont, Johann Baptist van (1577-1644), Belgian chemist, b. Brussels; educ. at Louvain, where he became prof. of surgery. For some years he devoted himself to the study of mysticism, but was turned to chem. and natural philosophy by the works of Paracelsus. He spent some years in France, Switzerland, and England, but in 1609 settled near Vilvorde and devoted himself to chemical investigations. He made a special study of 'gases' and estab. the present scientific sense of the word 'gas,' and investigated the chemical properties of the fluids of the human body. His chief work, *Ortus Medicinæ*, was pub. by his son in 1648.

Helmsstedt, Ger. tn in the *Land* of Lower Saxony (q.v.), 56 m. E. by S. of Hanover (q.v.). It is 2½ m. from the border with E. Germany, and is an important centre of communications. It grew up around the 9th cent. abbey of St Ludgeri, and had a univ. (1576-1810). There are interesting old churches and houses, and there are 2 Stone Age burial grounds. Textiles, machinery, soap, and margarine are manufactured, and there are lignite mines. Pop. 29,000.

Helmund, Helmand, or Helمند, riv. of Afghanistan, rising in the Koh-i-Baba chain, S. of the Hindu Kush, and flowing SW., W., and NW. into the lake of Hamun, Seistan, or Savaran, near the Persian frontier, after a course of 680 m. Numerous tribs. flow into it from S. Afghanistan. In its lower reaches it is wide and deep, but it dries up at certain seasons. The water-power is largely used for mills.

Hélolse, see ABÉLARD.

Helots (Gk *heilótai* or *heilótis*), serfs of the anct Spartans. The word was derived in antiquity from the tn of Helos in Laconia, but is more probably connected with *helos*, a fen, or with the root of *helein*, to capture. Some scholars suppose them to be of the Achaean race, but they were more probably the aborigines of Laconia, who had been enslaved by the Achaeans before the Dorian conquest. After the second Messenian war (685-668 bc) the conquered Messenians were reduced to the status of H., from which Epaminondas finally liberated them 3 centuries later, after the battle of Leuctra (371 bc). The H. were state slaves to the soil and assigned to individual Spartiates to till their holdings. Their masters could neither emancipate them nor sell them off the land, and they were under an oath not to raise the rent payable yearly in kind by the H. In time of war they served as light-armed troops or as rowers in the

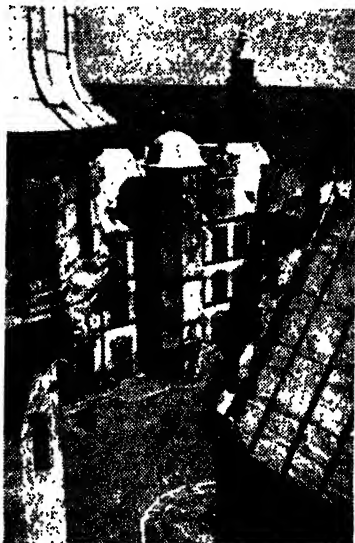
feet. From the Peloponnesian war onwards, they were employed as heavy infantry, and distinguished bravery was rewarded by emancipation.

Helpmann, Robert Murray (1909-), dancer and actor, b. and educ. in Australia. He came to England in 1933 and joined the Vic-Wells Ballet (later Sadler's Wells Ballet), becoming its *premier danseur* in 1934. An outstanding mime, he created many roles with the company before his retirement from it in 1950, and staged 5 ballets, *Comus*, *Hamlet*, *The Birds*, *Miracle in the Gorbals*, and *Adam Zero*. He also arranged the choreography for the film *Red Shoes*, and has appeared with success as an actor both on stage and screen, notably in *A Midsummer Night's Dream*, 1937, and *Hamlet*, 1944, in *Antony and Cleopatra* and *Caesar and Cleopatra* during the Festival of Britain, 1951, and at the Old Vic, 1956-7. In 1958 he appeared with the Royal Ballet in *Petrouchka*.

Helps, Sir Arthur (1813-75), essayist and historian, b. Streatham, Surrey. He was the son of a London merchant, and was educ. at Eton and Trinity College, Cambridge. After leaving the univ. he was private secretary to various public men, and, in 1841, his circumstances rendering him independent of employment, he retired to Bishop's Waltham, and devoted himself for 20 years to study and writing. Appointed in 1860 clerk to the Privy Council, he became a favourite of Queen Victoria, who entrusted him with the task of editing the *Speeches and Addresses of the Prince Consort*, 1862, and her own *Leaves from the Journal of our Life in the Highlands*, 1868. The first of his own pubs. was *Thoughts in the Cloister and the Crowd*, 1835, a series of aphorisms, and then came *Essays written in the Intervals of Business*, 1841, *Friends in Council* (4 series), 1847-59, and *Conversations on War and General Culture*, 1871. As a member of the Conversazione Society he was associated with such men as Alfred Tennyson, Arthur Hallam, and Monckton Milnes. In hist., he wrote *The Conquerors of the New World*, 1848-52, and *The Spanish Conquests in America* (4 vols.), 1855-61. He also wrote *The Life and Labours of Mr Thomas Brassey 1805-1870*, 1872, and biographies of Bartolomé de las Casas, Columbus, Pizarro, and Cortez. His essays were his most successful work, containing the thoughts of a shrewd and experienced man written in what Ruskin called 'beautiful quiet English.' They have not, however, any exceptional depth or originality. He was knighted in 1872. See E. A. Helps (editor), *Correspondence*, 1917.

Helsingborg (Hälsingborg), fortified seaport of Sweden, situated on the Sound (Öresund), opposite Helsingør (Elsinore), 32 m. NW. of Malmö. It has a good harbour, a fishing industry, and manufs. of sugar, chemicals, and machinery. It figured largely in the Scandinavian wars, being almost destroyed in the reign of Charles XI. The Danes were defeated here in 1710. Pop. 74,395.

Helsingør, or Elsinore, seaport of Denmark, situated on the is. of Zealand and on the E. coast of the narrowest part of the Sound, 27 m. N. of Copenhagen, and exactly opposite to Helsingborg in Sweden. To the NE. is the fortress of Kronborg (1580). The harbour, enlarged in 1883-4, is much used by ships for coaling and repairing. There is a patent slip and large shipbuilding yards, while good anchorage is afforded by the roadstead outside. The Sound dues were



Royal Danish Ministry of Foreign Affairs, Copenhagen
THE CASTLE OF KRONBORG,
HELSENGØR

The Sound and the Swedish coast
are in the background

collected here till 1857. H. is the scene of Shakespeare's *Hamlet*. Pop. 23,900.

Helsinki (Helsingfors), seaport and cap. of Finland and co. Uusimaa. Centre of the administrative, scientific, educational, and industrial life of Finland. The fine harbour is divided into 2 parts by a promontory, and is protected at its entrance by a number of small is., upon a group of which stands the fortress of Suomenlinna (Sveaborg). A third harbour is situated on the W. side of the promontory, and all 3 have granite quays. The city, which in 1810 had only 4065 inhab., Turku, the then cap., having 10,224, has increased with great rapidity, having 22,000 inhab. in 1860, 62,000 in 1890, 170,000 in 1910, 216,000 in 1926, 293,000 in 1939, and 404,000 in 1955. It

is the centre of an active shipping trade with the Baltic ports and with England, and of a railway system connecting it with all parts; it possesses wide streets, parks, gardens, and monuments. The prin. square contains the cathedral of St Nicholas, the senate house, and the univ., all striking buildings of considerable architectural distinction. The univ., which was founded in 1640 at Turku (Åbo), was removed to H. after having been burned down in the great fire of 1827.

hood of Saint Sebastian,' 1663, both at Amsterdam.

Helston, mrkt tn of Cornwall, England, 10 m. SW. of Falmouth, noted for the 'Furry' or 'Flora' Dance, held annually on 8 May. It was made a bor. by John in 1201; from the reign of Edward I to 1832 it returned 2 members to Parliament, and then 1 till 1883. Pop. 5870.

Helvellyn, mt in the lake dist., Cumberland, England, between Thirlmere and Ullswater. It is one of the highest peaks



Finnish Tourist Association

HELSINKI

The House of the Bank of Finland, with Great Church in the background

It had (1957) over 9000 students (5000 women). The manufs. of the city consist largely of engineering works, ship-building, electrical and cable works, and consumer goods. H. was savagely bombed by Russian planes in the Russo-Finnish war of 1939-40 and 1941-4. See also FINLAND, *History*.

Heist, Bartholomaeus van der (1613-70), Dutch painter. Probably b. at Haarlem, and said to have been a pupil of Franz Hals. He also studied under Nicolaes Elias of Amsterdam and was one of the founders of the Amsterdam Painters' Guild. His best work is in portraiture, and includes 'Muster of the Burgher Guard,' 1648, in the Rijksmuseum, which is his finest production and contains 24 full-length portraits; 'A Protestant Lady,' 1638, at The Hague; 'The Company of Captain Rogloff Bicker,' 1639, and 'The Syndics of the Brother-

in England (3118 ft), and is fairly easy of ascent, while magnificent views may be obtained from the summit. Famous steep approaches from the E. side are the Striding and Swirrell Edges. See LAKE DISTRICT.

Helvetia, see SWITZERLAND.

Helvetic Republic, system of gov., highly centralised and subordinated to France, consequent on the occupation of Switzerland by the Fr. imposed by them in 1798, and abolished to allow of the re-organisation of the old cantonal system by Napoleon in 1803. See also SWITZERLAND, *History*.

Helvetii, anct Celtic nation, which, according to Caesar, inhabited a region roughly corresponding to the W. part of present Switzerland. Their chief in hist. as allies of the Cimbri during their invasion of Italy, but are best known in connection

with their invasion of S. Gaul in 58 BC, when they were repulsed by Caesar with great slaughter. They were again defeated by Cæcina, a general of Vitellius, after the death of Nero. See E. Howald and E. Meyer, *Die römische Schweiz*, 1940.

Helvétius, Claude Adrien (1715-71), Fr. philosophical writer, descended from a family of physicians whose original name was Schweitzer (Latinised as Helvetius). His grandfather introduced the use of ipecacuanha. His father was first physician to Queen Marie Leczinska of France. H. was trained for a financial career, but occupied his spare time writing verses. At the age of 23, at the queen's request, he was appointed farmer-general, a post of responsibility and dignity, worth 100,000 crowns a year. Thus provided for, he proceeded to enjoy life to the uttermost. As soon as he had saved enough from his position as farmer-general, he retired to an estate in the country, and employed his large means for the relief of the poor.

De l'esprit appeared in 1758, and this both attracted attention and roused formidable opposition for the 'pernicious doctrines' in its philosophy. The author wrote 3 retractations, yet he had to give up his office at court, and the book was publicly burned by the hangman. Madame du Deffand said that he had written openly what everyone thought secretly. His philosophy belongs to the Utilitarian school. The keynote of his thought was that public ethics has a utilitarian basis, and he insisted on the importance of culture in national development. His *De l'homme* and *Le Bonheur* were posthumously pub. in 1772. See D. G. Mostratos, *Die Pädagogik des Helvétius*, 1891, and study by A. Koim, 1907.

Helwan, tn of Egypt, near the R. Nile, 10 m. S.E. of Cairo, noted on account of its warm sulphur springs. Before the First World War the pop. was about 8000, but since then it has decreased greatly.

Hemaka, Tomb of, see SAKKARA.

Hemans, Felicia Dorothea (1793-1835), poetess, b. Liverpool, the daughter of George Browne. She was a precocious child, and was encouraged in her taste for poetry. She pub. a vol. of verse as early as 1808, and another entitled *The Domestic Affections*, 1812. In this year she married Capt. H., an Irish officer who had served in Spain. In 1818 they separated after the birth of 5 sons, Capt. H. settling in Italy, and Mrs H. living in North Wales, Lancs, and Dublin. Her work is not strong, but graceful and pleasing. She suffered from a fatal facility, but some of her pathetic and sentimental poems became very popular. A complete ed. of her works was pub. posthumously in 1839. They include: *Records of Women*, 1825, *The Forest Sanctuary*, 1826, and *Songs of the Affections*, 1830. See H. F. Chorley, *Memorials of Mrs. Hemans*, 1836.

Hematin, or **Haematin**, pigment radicle which, together with globin, constitutes the colouring matter of the blood. It has the formula $C_{26}H_{32}N_4O_6FeO_4$, and to some extent is related to chlorophyll, the green colouring matter of plants.

Hematite, see HAEMATITE.

Hemel Hempstead, mrkt tn of Herts, England, 23 m. NW. of London. Formerly a centre of the straw-plaiting industry; now has paper-making, pyrotechnics, and brush-making industries, and numerous engineering and other factories on the new industrial estate. A Rom. villa has been discovered at Boxmoor close by. There are fine public buildings, and it has lately developed as a new tn. Pop. 36,000.

Hemelingen, SE. suburb of Bremen (q.v.), Germany.

Hemerocallis, see DAY LILY.

Hemeroscopion, see DENIA.

Hemianopia, blindness in one half of the visual field, usually due to disease within the brain.

Hemicrania, see MIGRAINE.

Hemidesmus, see SARSAPARILLA.

Hemiksem, industrial tn in Belgium, 6 m. SSW. of Antwerp, on the R. Scheldt. Chief manufs. are copper, lime, and cement. It has brick-works and breweries. Pop. 9800.

Heming, or Hemminge, John (d. 1630), actor. He is known to have been one of the chief proprietors of the Globe Theatre during the reign of Elizabeth, and is connected with Shakespeare in sev. ways. He is said to have created the part of Falstaff (but it is almost certain that this character was originally played by Thomas Pope), and he also played in sev. of Ben Jonson's dramas. With Henry Condell (d. 1627) he was a co-editor of the first folio of Shakespeare, issued in 1623.

Hemingford, or Hemingburgh, Walter (d. c. 1347), Eng. chronicler. He was sub-prior of St Mary's, Gisleburn, Yorks, and d. there. His chronicle extends from 1066 to 1346, and was fully ed. in 1848-9 by H. C. Hamilton.

Hemingway, Ernest Miller (1899-), Amer. novelist, b. Oak Park, Illinois, son of a doctor. Educ. at public schools and in France, he started work at 16. His father wished him to study medicine, but he became a reporter, then served with the It. Arditi in the First World War, was severely wounded, and gained the Croce de Guerra. A *Farewell to Arms*, 1929, based on his experiences, is one of the best war books. In 1921 he settled in Paris, where he made the acquaintance of Ezra Pound and Gertrude Stein (qq.v.). In 1926 he pub. a successful novel, *The Sun Also Rises*, and also *The Torrents of Spring*, a burlesque of Sherwood Anderson (q.v.). Next year he returned to the U.S.A. and settled first in Florida and then in Cuba. His *Death in the Afternoon*, 1932, and *The Green Hills of Africa*, 1935, are essays in the psychology of cruelty and death as shown in bull-fighting and big-game hunting. In 1936 he went to Spain as a special correspondent in the Civil war and got the material for his famous novel *For Whom the Bell Tolls*, 1940, and for his play *The Fifth Column*, 1938. Collections of his short stories are *Men Without Women*, 1927, *Winner Takes Nothing*, 1933, and *The First Forty-Nine*, 1938. A later novel was *Across the River and into the Trees*, 1950. In 1953 he

was a Pulitzer Prize winner, and in 1954 he was awarded the Nobel Prize for the narrative art shown in *The Old Man and the Sea*, 1952. With his clipped narration and predilection for violence, H. has inspired a whole school of 'tough' novelists, though none has equalled his best work. See studies by J. K. M. McCaffery, 1950, and P. Young, 1953.

Hemiplegia, paralysis of one side of the body. It is the most usual form of paralysis, and affects the leg, the arm, and also the muscles of the mouth and tongue. If the paralysis be on the right side, aphasia (q.v.) often accompanies H. Complete recovery is possible but not very frequent. Slight numbness, but not complete loss of sensation, accompanies H., although if the fibres carrying sensory impulses to the surface of the brain are destroyed, there may be considerable loss of sensation on the affected side. In certain cases there may be paralysis on the side opposite to the affected limbs. See PARALYSIS and APOPLEXY.

Hemiptera, name given to a large order of insects which includes the bugs, plant-lice, scab-insects, etc., and is also called Rhynchota. All individuals belonging to this order are characterised by a mouth consisting of a proboscis or jointed beak, which is concealed by being bent back under the thorax; wings, with rare exceptions, are 4 in number. All H. are sucking insects, and the mouth of the individual, like that of Orthoptera, does not change during its lifetime, but they differ from all other orders of insects in respect of the structure of the mouth. The order is divided into Heteroptera, whose wings, partly horny and partly membranous, fold flat on the back; and Homoptera, whose wings cover the body in a rooflike manner. The Anoplura, or Lice, are sometimes included in this group, or may be regarded as a separate order. See B. F. Cummings, *The Bed-Bug*, 1917; E. A. Butler, *Biology of British Hemiptera-Heteroptera*, 1923; J. Davidson, *List of British Aphides*, 1925; W. L. Macatee and J. R. Malloch, *Revision of the American Bugs*, 1925; J. G. Myers, *Insect Singers: Natural History of Cicadas*, 1929.

Hemling, Hans, see MEMLING.

Hemlock, name given to sev. plants of different characteristics. Two of these are umbelliferous species and occur in Britain. *Cicuta virosa*, the water H. or cowbane, is one well-known plant, and *Conium maculatum*, the common H., is another; both contain a deadly poison. The latter has a mouse-like smell, and is well known as the plant from which the poison drunk by Socrates was obtained. The H. spruce is an evergreen coniferous tree found in North America, and bears the botanical name of *Teuga canadensis*. It is a valuable plant on account of its bark, which is employed in tanning, the pitch it yields, and its strong timber. See CONIA.

Hemmingsson, Niels (1513-1600), Dan. theologian, b. Laaland; educ. under Melancthon at Wittenberg, becoming prof. of Greek there in 1543 and of

dialectics in 1544. In 1578 he returned to Copenhagen as minister of the church of the Holy Ghost, and prof. of Hebrew in Copenhagen Univ., which he made famous for its Protestantism. In 1577 he became prof. of divinity there, and in 1579 a canon in the church of Roschild. He assisted in the first trans. of the Bible into Dan.

Hemorrhage, see HAEMORRHAGE, and BLEEDING.

Hemp, plant of the genus *Cannabis*, family Urticaceae, of which *C. sativa* is the only known species. It is an ann. and is found wild in W. and Central Asia, Brazil, and tropical Africa, and is cultivated in Asia, America, and many parts of Europe. The H. plant is not unlike the hop family (to which it is botanically allied) in appearance, with erect stalk, growing from 3 to 16 ft high according to climate, square in shape, like the common stinging-nettle, 5 to 7-fingered leaves of lanceolate-acuminate form with serrated margins, and is dioecious. The seed is a valuable product, being used as bird-food, and, when crushed, as oil for soap and oil-cake. The H. plant secretes a resinous substance possessing narcotic and intoxicating qualities (see HASHISH), while Indian H. or Bhang has proved of value as a hypnotic in therapeutics. H. is, however, most valued for its fibre, which is obtained by burying the stems in mud and leaving them to rot for 7 days, when they are taken out and beaten in the water and all the woody matter is removed, a treatment similar to that of flax (q.v.).

Manilla Hemp, from the fibre of the long leaves of a species of banana tree, is an important industry in the Philippines, about 100,000 tons being produced annually. **Sisal H.**, from the *Agave sisalana* growing wild in Yucatan, Mexico, cultivated in Brit. and Portuguese West Africa and Dutch West Indies, is greatly used in the U.S.A. for making ropes and binder twine. World production of H. (including sisal and manilla types) in 1953-4 was 650,000 tons. Most of this was grown in Mexico, the Philippine Is., Tanganyika, and the Soviet Union. **Sunn H.**, or brown H., from the bark of *Crotalaria juncea*, is not as strong as true H., but resists water better. **New Zealand H.** is a growing industry. See also FIBRE and FIBRE SUBSTANCE. See S. S. Boyce, *Cannabis Sativa, a practical treatise on the culture of Hemp for seed and fibre*, 1900; H. R. Carter, *Modern Flax, Hemp, and Jute Spinning and Twisting*, 1925.

Hempstead, residential vil. and summer resort of Nassau co., New York, in H. township on the Long Is. R., 9 m. E. of Jamaica. It was settled by New Englanders in 1644. There is some manufacturing of clothing, radio equipment, lenses, machinery, and aircraft and auto parts. H. is the seat of Hofstra College. Pop. 29,130.

Hemsterhuis, Tiberius (1685-1766), Dutch classical scholar. From 1740 he held the chair of Greek in Leyden Univ. His eds. of Pollux, *Onomastic Lexicon*,

1706, Lucian, *Dialogues*, 1708 and 1732, and Plutus, 1744, are famous. He is regarded as the creator of the Dutch school of Gk philology. The *Anecdota Hemsterhuisiana*, ed. by Geel in 1825, contain various writings by H. See J. G. Gerretzen, *Schola Hemsterhuisiana*, 1940.

Hemsworth, tn of W. Riding of Yorks, England, 6½ m. N.E. of Barnsley. Pop. 13,857.

Hemy, Charles Napier (1841-1917), marine painter, b. Newcastle-on-Tyne; son of Henri F. H., distinguished musician. Educ. in art at Newcastle and Antwerp. He made sev. voyages as a boy, and at one time joined the Dominicans at Lyons; but finally settled in England in 1870, living in London till 1881, when he removed to Churchfield, Falmouth. He became a member of the R.W.S. in 1897; A.R.A., 1898; R.A., 1910. His works include: 'Homeward,' 'Operto,' 'Silent Adieu,' 'Pilchards,' 'Lost,' 1897, 'Smugglers,' 1899, 'Home Wind,' 'Birds of Prey,' 1901, 'The Crew,' 1902, 'Youth,' 1903, 'The Lifeboat,' 'Haul Aft,' 'London River,' 'The Crab Merchant,' 1904, 'Bound for London,' 1907, 'Plymouth,' 'Through Sea and Air,' 1910, 'Home at Last,' 1913, 'The Black Flag,' 1915.

Hen, see POULTRY.

Hénault, Charles Jean François (1685-1770), Fr. historian, remembered for his *Abrégé chronologique de l'histoire de France*, first pub. in 1744 without the author's name, comprising in 2 vols. the whole hist. of France from the earliest times to the death of Louis XIV. This enjoyed considerable contemporary popularity.

Henbane, or *Hyoscyamus niger*, species of Solanaceae found in Britain. It is a



HENBANE

biennial herb with large leaves and yellow, veined purple, flowers which are followed by an erect capsule dehiscing by means of its lid. The H. has an extremely disagreeable odour, hence its name, and is poisonous, narcotic, and sedative.

Henderson, Alexander (1583-1646), ecclesiastic, b. Creech, Fife. He graduated

at St Andrews in 1603, and in 1610 was appointed prof. of rhetoric and philosophy and questor of the faculty of arts. Shortly after this he was presented to the living of Leuchars. As he was forced upon his par. by Archbishop George Gladstones, and was known to sympathise with episcopacy, his settlement was at first unpopular, but he changed his views and became a Presbyterian in doctrine and in church gov., and one of the most esteemed ministers in Scotland. H. is one of the greatest of men in the hist. of Scotland, and next to Knox is certainly the most famous Scottish cleric. He was once called a 'Cabinet minister without office.' The existing Presbyterian churches of Scotland are indebted to him for the forms of their dogmas and their eccles. organisation. He is justly considered the second founder of the reformed Church of Scotland.

Henderson, Arthur (1863-1935), politician; b. Glasgow. Educ. at St Mary's School, Glasgow. He served his apprenticeship as a moulder at Newcastle-on-Tyne. He became Labour M.P. for Barnard Castle in 1903, and so remained until the general election of 1918. He was chairman of the Parl. Labour party, 1908-10; and on the coming of the First World War, when Ramsay MacDonald (q.v.) had to stand aside because of his pacifism, H. was again chosen chairman; and he so remained until 1917. P.C., 1915. He was president of the Board of Education, 1915-16; paymaster-general and labour adviser to gov., 1916; member of war-committee of Cabinet, 1916-17. Gov. emissary to Russia, 1917. He resigned from the Coalition Gov. because of Lloyd George's banning of the Stockholm Labour Conference in the last-mentioned year. Early in 1924, having been returned for Burnley, he joined the first Labour Gov. as home secretary. In the Labour Gov. formed June 1929 he became foreign secretary, in which office he was responsible for the Anglo-Egyptian Treaty (signed after his death, in 1936) under which the Brit. military occupation was terminated. In 1932 he presided over the Geneva disarmament conference, and received the Nobel Peace Prize in 1934. See E. A. Jenkins, *From Foundry to Foreign Office. The Romantic Life of the Rt. Hon. Arthur Henderson*, 1933.

Henderson, John (c. 1747-85), actor, b. London. He made his debut at Bath in 1772 as Hamlet, and came to be known as 'Bath Roscius.' In 1777 he appeared at the Haymarket, London; in 1778-9 with Sheridan at Drury Lane; and after 1779 at Covent Garden. He was a friend of Mrs Siddons and Gainsborough. He was successful in many Shakespearean roles; and Wm Cowper's poem *John Gilpin* was popularised by his reciting it.

Henderson, Sir Neville Meyrick (1882-1942), diplomat, educ. at Eton. He entered the diplomatic service, 1905. H. was secretary, at successive periods, at St Petersburg, Tokyo, St Petersburg (second time), Rome, Nish, and Paris; counsellor at Constantinople, 1921, and acting high

commissioner there, 1922-4. He was minister to Egypt, 1924-8; to France, 1928-9; and to Yugoslavia, 1929-35; and ambas. to the Argentine and minister to Paraguay, 1935-7. H. is principally remembered for his services as ambas. to Germany, 1937 until 1939 (Sept.). He worked hard to prevent a breach between Britain and Germany, and his book on the subject, *Failure of a Mission*, 1940, is the story of a bitterly disappointed man with a deep sense of personal failure. He also wrote *The Water under the Bridges*, autobiography, pub. in 1945.

Henderson, Sir William Hannam (1845-1931), admiral, b. Worth, Sandwich. Commanded the *Conquest* (1889-92), and served under Sir Edmund Fremantle in the punitive expedition against the sultan of Vitu, East Africa, 1890. Commodore and senior officer in Jamaica during the Cuban war. In 1902 promoted to flag rank and appointed adm.-superintendent at Devonport; full adm., 1908. He will be remembered as a reformer of naval education, who saw the value of systematic instruction in strategy and tactics. H. derived his appreciation of the importance of this subject from Sir E. B. Hamley, *Operation of War*, 1867, and he received much encouragement in his efforts from Prince Louis of Battenberg.

Henderson, cap. city of Henderson co., Kentucky, U.S.A., on R. Ohio, 10 m. S. of Evansville, Indiana. The chief industry is the preparation of tobacco. H. manufs. wood, wire, food, cotton, and concrete products, furniture, clothing, processed oil, carbon black, and plastics. It has an airport. Pop. 16,837.

Hendiads (Gk *heis* one, *dia* through, *duo* two) is the use of 2 words linked by a conjunction in place of one word subordinated to another. It is rare in Eng., but occurs in such expressions as 'Nice and hot' (for 'Nicely hot'), 'Try and get it' (for 'Try to get it'). See also **FIGURE OF SPEECH**.

Hendon, municipal bor. of Middx., England, comprising the anct pars. of H. and Edgware, and a large residential London suburb. It extends from Hampstead to the Herts border, and includes Mill Hill, Edgware, Golders Green, and parts of Hampstead Garden Suburb (q.v.v.). Burnt Oak, Colindale, and Cricklewood. The Edgware Road (Watling Street) forms nearly the whole of its W. boundary, and the R. Brent flows through its SE. part. The old vil. of H. itself stands on high ground, hence the name, meaning 'high hill'. The Welsh Harp (or Brent) reservoir, formed in 1838 to supply the Grand Junction (Regent's) canal, is a popular resort for skating and fishing. The Metropolitan Police College, opened in 1934, is near H. aerodrome, once an important centre for flying training and racing. The Brit. Museum newspaper library is opposite Colindale station. H. returns 2 members to Parliament. Pop. 155,800.

Hendrick, Burton Jesse (1871-1949), Amer. historical writer and biographer, b. New Haven, Connecticut. Educ. at

Yale, he began as a journalist on the *New Evening Post* and then joined the staff of *McClure's Magazine*; from 1913 to 1927 he was an associate editor of *The World's Work*. His first book was *The Age of Big Business*, the title of which perhaps affords an indication of his major interest as a student of Amer. hist. He was awarded the Pulitzer Prize for his part in *The Victory at Sea*, 1920, written in collaboration with Adm. Wm S. Sims (q.v.). But he will be chiefly remembered in Great Britain for his *Life and Letters of Walter H. Page*, a full and attractive portrait of a great ambas. and a great man; and for his biography of Andrew Carnegie, 1933. The former work, which was pub. in 3 vols. between 1922-5, is remarkable for the wealth and historical importance of the material prepared by H. In 1933 was pub. another vol. on *The Earlier Life and Letters*. The first instalment of his work earned him a Pulitzer Prize for the second time. For *The Training of an American*, 1928, he received yet a third Pulitzer Prize. His later books include 2 on the great issues of the Civil war: *Statesmen of the Lost Cause*, 1939, and *Lincoln's War Cabinet*, 1947, showing with shrewd irony opposite sides of the great struggle.

Hendricks, Thomas Andrews (1819-85), Amer. political leader, vice-president of U.S.A. in 1885, b. near Zanesville, Ohio. Graduated at Hanover College, Indiana, and in 1843 began a successful career at the Bar. From 1868 till his death he was put forward for nomination for the presidency at every Democratic convention, save that of 1872. He had been U.S. Senator for Indiana from 1863 to 1869 and governor of the state, 1873-7. In 1884 he ran for vice-president when Grover Cleveland was his party's presidential nominee and this time was successful. He d. shortly after assuming office and this gave rise to the passing by Congress of the law which, as it stands at present, provides that in case of the death of both president and vice-president, the line of succession shall run in the following order: speaker of the House of Representatives, secretaries of state, treasury, defense, attorney-general, postmaster-general, secretaries of the interior, agriculture, commerce, and labor.

Hendyns; Proverbs of series of M.E. verses, contained in the Harl. MS. 2253, consisting of 6-lined stanzas, rhymed a b a b a b, each of which closes with an old folk proverb, many of which are still in common use. The proverbs seem to have been collected from older 13th-cent. material.

Heneguen, or Sisal Hemp, see **FIBRE AND FIBROUS SUBSTANCES**.

Henge Monuments, type of ritual prehistoric earthwork enclosure in which a ditch occurs inside a circular bank. They are thus of sacred and not defensive use. The most notable examples in Britain are Stonehenge and Avebury, and most H. M. belong to the Early Bronze Age. In recent years much attention has been paid to the excavation and geographical distribution of such sites, but many

problems in connection with them are yet unsolved. In certain of the sites, of which Woodhenge is typical (see *STONEHENGE*), the more usual stone uprights were represented by timber posts. The word H. is derived from O.F. *hengen*, to hang, referring to the horizontal lintel stones.

Hengelo, industrial tn in the prov. of Overijssel, Netherlands, 5 m. NW. of Enschede. There are large diesel engine and cotton industries, also dyeing, brewing, and railway engineering. The tn was devastated in the Second World War, but rebuilt again. Pop. 54,450.

Hengist and Horsa (? c. 449-88), according to Bede, warriors who led the Jutish invasion of Kent in the 5th cent. They are said to have been called in by the Britt. king, Vortigern, to defend him against the Picts, landing in Kent, probably at Ebbsfleet, in 449. They quarrelled with Vortigern, and in a battle with him in 455 Horsa was killed. Hengist and his son Esc gained 2 great victories over the Britons in 465 and 473 and in 488 Esc is said to have become king, presumably on Hengist's death. Modern scholarship is inclined to the view that though Hengist's and Horsa's victories opened up Kent for their followers the actual foundation of the Kentish kingdom was the work of Esc.

Hénin-Liétard, Fr. tn in the dept of Pas-de-Calais. It has coal-mining, gas-works, and steelworks. Pop. 22,400.

Henle, Friedrich Gustav Jakob (1809-1885), Ger. pathologist and anatomist, b. Fürth, Franconia. His famous *Manual of Rational Pathology*, 1846-53, marked a new era in pathological study. From 1855 to 1871 he was publishing his great *Handbook of Systematic Human Anatomy*.

Henlein, Konrad (1898-1945), Sudeten-Ger. politician, b. Maffersdorf, Reichenberg. He became a bank clerk and later began a Ger. gymnastic movement in Bohemia soon after the First World War. He took a leading part in organising the Sudeten-Ger. party in Czechoslovakia, and in 1936 he succeeded the extremist trade-union leader Kaspar as head of the party. With support from the Nazis in Germany he abandoned the role of constitutional loyalist seeking the redress of minority grievances and demanded first autonomy for the Sudetenland and later the complete transfer of that ter. to the Ger. Reich. After the *Anschluss* his followers were absorbed into the Nazi party, and when Czechoslovakia was occupied by the Germans, H. was appointed chief of the civil administration in the protectorate (see *CZECHOSLOVAKIA*). Later he became civil commissioner for Bohemia. In May 1945 he was captured by the U.S. Seventh Army and committed suicide in prison.

Henley, John (1692-1756), 'Orator Henly', b. Melton Mowbray, educ. at Cambridge; became a teacher, and took holy orders, with curacies in Melton Mowbray, London, and Chelmondiston, Suffolk. In 1726 he left the Church and estab. in London his famous 'Oratory.'

Here he preached primitive Christianity on Sundays, and taught 'universal knowledge' on Wednesdays, attracting large numbers by the strangeness of his methods and doctrines. In 1730 he became a pensioner of Walpole and editor of the *High Doctor*. He wrote *Esther* in 1714.

Henley, William Ernest (1849-1903), poet, critic, and editor, b. Gloucester. He was educ. at Crypt Grammar School in that city. T. E. Brown, the poet, was headmaster there for some time, and gave H. his first introduction to a man of genius. To the end, H. was no classical scholar, but his knowledge of, and love for, literature were vital. At the age of 25 his health failed; he was sent to a hospital in Edinburgh, and from there he sent poems, describing his experiences in the ward, to Leslie Stephen, who was editing the *Cornhill*. The poems were full of poignant force, and Stephen visited his contributor in hospital, in company with Robert Louis Stevenson. The meeting between H. and Stevenson, and the friendship which arose between them, form a well-known literary episode. In 1877 H. went to London and began his editorial career by editing *London*. At the end of 1886 he came before the public as a poet. Later he ed. the *Scots Observer*, and had the knack of 'discovering' literary men. It was that paper which gave to the world Kipling's *Harrack-room Ballads*, 1892. H. exercised by his originality an inspiring influence on the higher class of journalism, but his fame must rest on his poetry, to which his physical sufferings have been said to be the key; there is a feminine note in it and a perverseness in his judgment. He is at his best in fugitive or solitary poems on deeply-emotional themes, such as sunset and a quiet passing. Like the poetry of John Davidson and John Masefield, the poetry of H. is notable for clear-cut actuality and subordination of beauty for its own sake to the effect of power. He followed Kipling in the swashbuckling vein, but in his lyrics he revealed a genuine if not always original force. His best work is his *London Voluntaries*, 1893, poems unconventional but stimulating and challenging. His collected works were pub. in 1908 and 1921. See lives by L. C. Cornford, 1913; K. Williamson, 1930; and J. Connell, 1949.

Henley-on-Thames, tn of Oxon, England, on R. Thames, 35 m. W. of London, a favourite summer resort, and noted for the ann. amateur regatta, founded in 1839. The tn dates from Rom. times. The fine 5-arch bridge was built in 1786. Malting and brewing are the chief industries. Pop. 8000.

Henna (Arabic *henna*'), substance made from the leaves of *Lawsonia inermis*, the Egyptian privet or henna-plant, and much used in the E. for staining nails, finger-tips, etc., and by men for dyeing their beards, the colour produced being a reddish orange. Its use has prevailed from very early times. To-day it is used by women for dyeing hair.

Hennebont, riv. port in the dept of Morbihan, France. It stands on the

Blavet, 6 m. NE. of Lorient. Much of the town is very old. It has boat-building, tanning, metal, and distilling industries. It was severely damaged in the Second World War. Pop. 8200.

Henner, Jean Jacques (1832-1905), Fr. painter, b. Bernwiller; educ. under Drölling and Picot. In 1858 he obtained the Grand Prix de Rome. He was famous in his own time for nude figure studies, sev. of which were acquired by the Luxembourg.

Henrey, Madeleine (1906-), Fr. author who writes in Eng., b. Montmartre, Paris. The story of her girlhood is related in *The Little Madeleine*, 1951, and is developed in *Madeleine Grown Up*, 1952. Her other writings include *A Farm in Normandy*, 1941 (U.S.A. *Madeleine, Young Wife*), *A Village in Piccadilly*, 1942, *Paloma*, 1951, and *The Virgin of Aldermanbury*, 1958.

Henrietta Maria (1609-69), queen of England, daughter of Henry IV of France.



HENRIETTA MARIA

She married Charles I in 1625. The early years of the marriage were unhappy, but after the assassination of Buckingham the barrier between the married pair was broken, and the bond of affection that had united them never loosened. H.'s constant efforts on behalf of her Catholic co-religionists, and her personal vivacity and extravagance, made her unpopular; and her political influence over Charles probably encouraged his absolutist views. It is estab. that she exerted considerable influence on her children's religious views after Charles's death. In 1644 the queen left her husband and went to France. She never saw Charles again, though she intrigued constantly on his behalf, and never recovered from the shock of his death. She returned to England at the Restoration, but found the atmosphere of her son's court uncongenial, and retired to France where she d. See lives by Carola Oman, 1936, and J. Mackay, 1939.

Henrietta (1644-70), daughter of Charles I of England, and wife of the duke of Orleans, brother of Louis XIV, b. Exeter, and noted for her beauty and intelligence. She was successful in persuading her brother, Charles II, into signing the treaty of Dover with France, 1670. On her return to France she d. suddenly, declaring that she had been poisoned. See fictional study by Margaret Irwin, *Royal Flush*, 1932.

Henry I (1068-1135), king of England, the youngest son of William the Conqueror, and the only son born in England to William after he became king. This is of importance, since H. made this fact one of his chief claims to the throne of England against the claim of his eldest brother Robert. On the death of Rufus, whilst Robert was hastening back from the Holy Land, he seized the crown of England (1100). The early part of his reign was taken up with struggles with Robert. These struggles ended in a compromise by which Robert was to receive an ann. pension. Robert, however, again went to war and was overwhelmed at Tinchebrai (1106). Robert remained a prisoner in the hands of H. until his death in 1134. The struggle in Normandy was continued for a time by Robert's son who was supported by the Fr. king. Ultimately, H. was entirely successful in winning back Normandy for the Eng. crown. He had done much to bring about the amalgamation of Norman and Saxon into a unified Eng. race, and himself married Matilda, daughter of Malcolm III, King of Scotland. H. was remembered as a just, if grasping, ruler, interested in restoring law and order to the court and the country. The judiciary and the exchequer were developed during his reign. In 1119 his only son, Wm, was drowned in the wreck of the *White Ship*, and the remainder of H.'s reign was taken up in attempting to settle the succession. His daughter, Matilda, had married: (1) the emperor Henry V; (2) Geoffrey of Anjou. Although H. compelled the barons to swear to recognise Matilda as queen on his death, the throne was ultimately obtained by Stephen. On his accession H. invited Anselm (q.v.) to return to England, but in 1103 quarrelled with the archbishop on the question of investiture but a compromise was reached in 1105. See E. A. Freeman, *The History of the Norman Conquest*, vol. v, 1867-79; Kato Norgate, *England under the Angevin Kings*, vol. 1, 1887; H. W. C. Davis, *England under the Normans and Angevins*, 1905; Z. N. Brooke, *The English Church and the Papacy*, 1931.

Henry II (1133-89), king of England, son of Matilda, daughter of Henry I, and Geoffrey of Anjou, b. at Le Mans. His mother failed to make good her claim to the Eng. crown and finally returned to Normandy (1148). H. visited England 3 times between 1142-9. At this point his chances of ever being king of England seemed remote; but in 1151 he inherited his father's estates and soon possessed virtually half of France. He ruled

Normandy, Maine, Anjou, and Touraine, and his marriage to Eleanor (1152) brought him her dowry of Aquitaine. He visited England again in 1153 and at Wallingford it was agreed that he should succeed Stephen in England.

He was crowned in 1154 and began to consolidate the much-weakened royal authority at once. H. had to move cautiously at first; among the men who counted, there was not the desperate longing for a strong monarchy that the chroniclers ascribe to the common people, and H. succeeded in establishing himself firmly on the throne because he was ready to conciliate enough of the men who had prospered during the Civil war. As his position grew stronger H. acted swiftly and positively, turning the mercenaries out of the country, and demolishing the unlicensed castles. The judiciary and the financial system were reformed and expanded; here H. was able to build on the work of his grandfather, Henry I, and to revive practices which had fallen into disuse during the anarchy. To carry out his administration H. relied increasingly not on the great magnates but on a body of efficient, relatively disinterested civil servants, the most famous being Ranulf de Glanvill (q.v.). Contemporary observers agree that H. himself exercised a considerable amount of personal supervision over the detail, as well as the general structure of his administration. He was the greatest of the Plantagenets: a man of great intelligence, energy, and political astuteness, and more ready to accept and act on criticism than most rulers of his time. His eccles. policy was less successful. In his attempt to confine the limits of church authority—allegedly to the bounds they had had in his grandfather's time—H. came into conflict with a personality as energetic and determined as his own, that of his ex-chancellor, Thomas Becket (q.v.). The struggle ended in Becket's murder and canonisation, and in H. withdrawing the demands embodied in the Constitutions of Clarendon (q.v.) and doing penance at Becket's tomb.

Though his impact on Eng. affairs was considerable and permanent, H. actually spent much of his reign in France, struggling against the Fr. king and his own subjects, who were often abetted by H.'s own sons. Three weeks before his death he was defeated by an army commanded by Philip Augustus and his own son and heir, Richard, and he d. at Chinon, lonely and embittered. His policy in Ireland was more successful. He encouraged baronial colonisation there, and on Strongbow's death was able to appoint a royal minister in his place and virtually annex the country. See records of contemporaries, e.g. Wm of Newburgh, *Giraldus Cambrensis*, *Walter Map*; see also W. Stubbs, *Constitutional History of England*, 1874-8; F. Pollock and F. W. Maitland, *History of English Law*, 1898; Kate Norgate, *England under the Angevin Kings*, 1887; L. F. Salzman, *Henry II*, 1914.

Henry III (1207-72), king of England,

elder son of John. At the age of 9 he succeeded to his father's throne, at a time when the baronial struggle was at its height. So far had the opposition to his father gone that Louis of France had been invited to accept the allegiance which many of the Eng. barons had refused to John. By the judicious measures of the regent Pembroke, of Hubert de Burgh, and Stephen Langton, H. was generally received as king and Louis was compelled to leave the country. On the death of Pembroke (1219), Hubert de Burgh ruled for H., and adopted a distinctive and national policy. In 1227, however, H. declared himself of age. In 1232 he deprived Hubert de Burgh of all his offices, and finally began the period of personal gov. in 1234. His policy was weak and vacillating, and was influenced first by the foreign favourites and relations introduced by his mother, and then by those introduced by his wife. His war with France ended in disaster. His continued misrule, his attempted extortions of money, the undue influence of the papacy over the kingdom, and his numerous grants to his favourites, made him generally unpopular and caused the growth of united opposition, led by de Montfort (q.v.), H.'s brother-in-law and a former favourite. Matters came to a head when H. finally demanded a huge sum of money to purchase for his son Edmund support to obtain the kingdom of Sicily granted him by the pope. By the Provisions of Oxford (1258) his power was relegated to a committee of barons, led by de Montfort. But the committee soon disagreed among themselves, and in 1263 the Provisions of Oxford were placed under the arbitration of Louis of France, who decided in favour of H. (1264) and war immediately broke out. The party of Simon de Montfort overwhelmed the king at Lewes, and for a time the gov. passed into their hands. But de Montfort's power alienated those of the barons who still supported him; in 1265 he was overcome and killed at Evesham by Prince Edward. Henceforth the troubles of the reign ceased, so much so that Edward was able to depart on crusade, and H. d. peacefully at Westminster. So thoroughly had affairs been settled that Edward succeeded peacefully to a kingdom to which he did not return until 2 years after his father's death. See H. W. C. Davis, *England under the Normans and Angevins*, 1905; Kate Norgate, *Minority of Henry III*, 1912; E. Jacob, *Studies on the Period of Baronial Reform*, 1925; Sir F. M. Powicke, *Henry III and the Lord Edward*, 1947.

Henry IV (1367-1413), king of England, first of the Plantagenet house of Lancaster to ascend the throne. He was the son of John of Gaunt, the 4th son of Edward III. He was known in early life as Henry of Bolingbroke, the title being taken from the place of his birth. He was one of the lords appellants and took part in the 'Merciless Parliament,' 1388, but later supported Richard II, and was made duke of Hereford, 1397. But in 1398 he was

banished. On his father's death in the following year, whilst Richard was in Ireland, Bolingbroke landed at Ravenspur and marched down through England, proclaiming that he had only returned to claim his family estates. In fact he quickly forced Richard, deserted and betrayed, to abdicate, and was himself proclaimed king as Henry IV (1399). He based his claim mainly on the choice of Parliament. His reign is memorable chiefly for the insecurity and rebellion which pervaded it, and for the impetus which the circumstances of his accession to the throne gave to Parliament. The Welsh rebelled under Owen Glendower (Glyndwr); when the Scots invaded England they were beaten by the Percys at Halidon Hill (1402). Angered by the king's treatment of them, the Percys now rebelled, and attempted to form a junction with the Welsh under Owen Glendower; they were, however, defeated at Shrewsbury (1403). After this the Welsh rebellion was really a spent force, but Wales can be said to have been practically independent of England's authority during the greater part of this reign. Prince James of Scotland was captured and kept a prisoner in England, and H. attempted some attacks in France. Just as his need for parl. support led to parl. concessions, so H.'s need for eccles. goodwill to consolidate his throne resulted in increased authority for the Church, and a vigorous persecution of the Lollards was begun. There were further rebellions, both unsuccessful, in 1405 and 1408, and in his last years serious disagreements with his son, the prince of Wales. Able, intelligent, and ruthless in his own interests, H. appears to have degenerated at the end of his life into a suspicious tyrant, obsessed by the fear of possible deposition. See J. Gairdner, *Houses of Lancaster and York*, 1874; J. H. Fleming, *England under the Lancastrians*, 1921.

Henry V (1387-1422), king of England, eldest son of Henry IV, b. at Monmouth. The stories told of his mad-cap youth are almost certainly exaggerated. He received a sound military training in the campaigns in Wales and against the Percys. He quarrelled repeatedly with his father during the last years of Henry's reign, and made sev. policy changes immediately he succeeded to the throne (1413). He was anxious to conciliate, where possible, potential enemies, and to unify the country, so that he would be free to pursue his supreme ambition, the conquest of France. The Percys were restored to favour, and Richard II's body given honourable burial in Westminster Abbey; but any attempts at rebellion were ruthlessly quelled, and the persecution of the Lollards rigorously continued. H. revived Edward III's claims to the Fr. throne and invaded France in 1415. France was weakened by Civil war, and H. won an outstanding victory over greatly superior forces at Agincourt (1415) and reduced N. France. In 1417 he returned to France with a larger army.

His military successes and the defection of the Burgundians forced the Fr. to sign the treaty of Troyes (1420) by which H. married the Fr. king's daughter, Catherine of Valois (q.v.) and was recognised as heir to the Fr. throne. But Fr. resistance was not yet entirely broken, and H. d. of dysentery at Vincennes while on his way to help Burgundy.

H. was more than an outstanding soldier and brilliant strategist. He was also a dreamer and a fanatic. His Fr. campaigns had for him almost the character of a religious war, and it seems probable that he saw himself as the unifier and leader of a regenerated England and France, who, their differences resolved, should lead Christendom in a victorious crusade against the infidel. See also HUNDRED YEARS WAR. See lives by C. L. Kingsford, 1901, and R. B. Mowat, 1920; see also A. H. Burne, *The Agincourt War*, 1936.

Henry VI (1422-71), king of England, only son of Henry V and Catherine of Valois. He was less than 12 months old when he succeeded to the Eng. throne, and shortly afterwards, by the death of his grandfather Charles VI of France, he became titular king of France. His ters. were administered for him by his uncles Bedford and Gloucester. The first attempts of the Fr. Dauphin (Charles VII) to obtain possession of his father's throne failed, but after the appearance of the Maid of France (Joan of Arc), the Eng. began gradually to lose their Fr. possessions. The death of Bedford, the one really competent Eng. military leader, in 1435 was really the final blow to the Eng. cause, and by 1453 Calais alone remained in Eng. hands. H. had married Margaret of Anjou (q.v.) in 1445. She immediately allied herself with the Beaufort faction at court. After the downfall and death of Gloucester, Margaret became the real formulator of court policy; her husband, plous and weak-minded, was entirely under her influence, and events moved rapidly to a climax. The loss of the Fr. possessions, the return of the soldiers from France, and the resulting unemployment problem which followed, all helped to make the Lancastrian dynasty unpopular. Margaret's domineering character made her many enemies, and she soon incurred the hatred of the Yorkists, who now became her chief opponents. In 1453 Margaret gave birth to a son, thus dashing York's hopes of eventually succeeding H. as king; but from 1453 to 1455 H. was completely insane, and Richard of York, a nearer lineal descendant of Edward III than H., became protector. H. recovered; York was deprived of his office, and a clash between the rival interests became almost inevitable. The year 1455 saw the battle of St Albans, and from that date until 1471 battles between Yorkists and Lancastrians were frequent. Wakefield (1460) delivered York into the hands of Margaret, by whom he was beheaded, but Towton (1461) placed Edward, son of Richard of York, securely on the throne. H. died to Scotland, but was captured and put in the Tower (1465). The power

behind Edward's throne was Richard Neville, earl of Warwick, 'the king-maker' (q.v.), but in 1469 Warwick joined forces with Margaret of Anjou, who was in France. Edward was forced to flee the country and for a short time H. was again king. But Edward returned, Warwick was killed at the battle of Barnet, and the Lancastrian cause finally crushed at Tewkesbury (1471). H. was again imprisoned in the Tower and was murdered on the night that Edward returned to London. For a time H. was popularly revered as a martyr. Never really more than a king in name, he is remembered for his piety and interest in learning. He founded Eton and King's College, Cambridge. See J. Gairdner, *Houses of Lancaster and York*, 1874; F. A. Gasquet, *The Religious Life of Henry VI*, 1923.

Henry VII (1457-1509), king of England, b. at Pembroke Castle, son of Edmund Tudor and Margaret Beaufort. He was descended from Owen Tudor, who is said to have married the widow of Henry V, Catherine of Valois; while through his mother he was descended from the Beauforts, the descendants of John of Gaunt and Catherine Swinford. After Henry VI's death H. was the sole surviving Lancastrian claimant of any note; he became an exile on the Continent and in 1485 invaded England, defeating and killing Richard III at the battle of Bosworth. He was formally recognised as the rightful king by Parliament. H. was the founder of the Tudor dynasty. By his marriage with Elizabeth of York he united the 2 houses of York and Lancaster, and by his overthrow of Simnel (q.v.) and Warbeck (q.v.), the pretenders, he finally estab. his line firmly on the throne of England, and his skilful diplomacy gave his country a position of importance in Europe such as it had not had for a century. The policy of royal marriages which he initiated was of vast importance when judged by its later results. The marriage of his son Henry with Catherine of Aragon, after she had first wedded his elder son Arthur, was eventually to be the cause of the separation from Rome, whilst the marriage of his daughter with James IV of Scotland led to the ultimate union of the crowns of England and Scotland. He adopted a policy of peace and estab. sound commercial relations with the Continent. He counted on his alliance with Spain to balance the growing influence of France. At home, H. succeeded in crushing the independence of the nobility who had survived the Wars of the Roses, by a policy of confiscations and fines, and at his death he left a huge fortune to his son, Henry VIII, and a gov. machine centralised under Crown control. His extortions caused discontent and it is significant that one of his son's earliest acts as king was to procure the execution of his father's hated agents, Empson (q.v.) and Dudley; but from 1499 H.'s financial position enabled him to do without parliaments, and by then, too, his control over the administration was too complete to allow a revolt to have any

possibility of success, especially as he had imprisoned or executed all rivals of any influence. H. patronised the New Learning and encouraged exploration; he was the builder of the fine Henry VII chapel in Westminster Abbey. His reign saw the real flowering of the Renaissance in England. See lives by J. Gairdner, 1889; Gladys Temperley, 1914; and C. H. Williams, 1937. See also A. F. Pollard, *The Reign of Henry VII from Contemporary Sources*, 1813-14.

Henry VIII (1491-1547), king of England, 2nd son of Henry VII and Elizabeth of York. His elder brother, Arthur, d. in 1502. H. succeeded his father in 1509, and



HENRY VIII

in the same year married Catherine of Aragon (q.v.), his brother's widow, a marriage which apparently caused him no scruples at the time. The first years of his reign seemed full of promise. H. was young, handsome, and athletic; he was intelligent, interested in the New Learning and in music, and free and easy with his subjects.

His reign falls naturally into 2 parts, separated by the year 1529, which can be regarded as the critical year of the divorce. The early period is notable for H.'s foreign policy; in this he was ably served by Wolsey (q.v.) but H.'s will was always paramount. A lifelong rivalry had begun between Francis I of France and the Emperor Charles V. H. and Wolsey hoped to profit from their hostility by making England the arbiter between them, at the same time enhancing the prestige and influence of England, and her king, by so doing. Both kings sought H.'s favour, Francis at the Field of the Cloth of Gold (q.v.) and Charles, less ostentatiously, in Kent. But it was an extravagant policy, doomed to failure.

In 1525 Francis was utterly Charles at Pavia, H. hav Charles from 1522, probably against Wolsey's advice.

But by then H.'s policy had become dominated by his desire to divorce his wife. He was determined to marry Anne Boleyn (q.v.); and he was also probably genuinely concerned at Catherine's failure to provide him with a male heir. Of all their children only one daughter, Mary, had survived infancy. At first there seemed a possibility that the divorce might be granted. Campegius came to England to hear the case, but Catherine appealed direct to the pope and the court was adjourned. The position was complicated by the fact that Charles V, Catherine's nephew, controlled Rome. Wolsey's failure to obtain the annulment led to his downfall (1529). Henry then proceeded to act through Parliament, summoned for the purpose, to repudiate papal supremacy and have himself acknowledged as supreme head of the Church in England. The Eng. eccles. courts then pronounced his marriage null and void. He went on to suppress the monasteries (1536-9); their lands were confiscated and granted to his supporters. Though H. in fact made possible the Eng. Reformation and initiated it by the separation from Rome, he had little sympathy with Protestant dogmas. As early as 1521 a pamphlet which he had written against Lutheranism had won him the title of *Fideli Defensor* (q.v.) from the pope; and H.'s own religious views are quite clearly expressed in *The Six Articles* statute (q.v.) which was strongly opposed by Cranmer. During his reign Protestants were burnt for heresy even while Catholics were being executed for refusing to take the oath of supremacy.

Henry ended his reign with the reputation of a tyrant; in 1536 the Pilgrimage of Graces had been viciously suppressed, and men of the calibre of More and Fisher had *d.* rather than sacrifice their principles to Henry's will. But the power of the Crown had been considerably strengthened by H.'s eccles. policy, and the monastic confiscations gave impetus to the rise of a new nobility which was to become so influential in succeeding reigns.

H. had married Anne Boleyn in 1533; she bore him one daughter, later Elizabeth I. Anne was executed in 1536 and he then married Jane Seymour (q.v.) who *d.* the following year after giving birth to the future Edward VI. His marriage to Anne of Cleves (q.v.) in 1540, with its implication of an alliance with the Ger. Protestants, ended in an annulment a few weeks later, and in the downfall of its instigator, Thomas Cromwell (q.v.) who had by this time served his purpose of carrying through H.'s religious policy. H. married, fifthly, Catherine Howard (q.v.) who was executed in 1542, and sixthly, Catherine Parr (q.v.) (1543), who survived him. His reign began and ended with 2 notable victories against the Scots; at Flodden, 1513, and Solway Moss, 1542. See *Letters and Papers of the*

Reign of Henry VIII, 21 vols., ed. by S. J. Brewer and J. Gairdner, 1910. See also F. A. Gasquet, *Henry VIII and the English Monasteries*, 1899; A. F. Pollard, *Henry VIII*, 1905; F. M. Powicke, *The Reformation in England*, 1941; H. Savage (editor), *The Love Letters of Henry VIII*, 1949.

Henry I (c. 1010-80), king of France from 1031, son of King Robert and grandson of Hugh Capet. The early years of his reign were spent in fighting the feudal nobles, who supported the claims of his younger brother Robert. When this dispute was settled he turned his attention to Normandy, where he attacked Wm the Bastard (later William I of England) without success.

Henry II (1154-89), king of France, in 1153 married Catherine de' Medici. He succeeded his father, Francis I, in 1547. A war with England resulted in the capture of Calais, which had for over 2 centuries been in the possession of England. H. attempted to suppress Protestantism in France, but gave help to Protestants in the empire in order to weaken the Hapsburg authority. H. was accidentally killed by the count of Montgomery at a tournament held to celebrate his daughter's marriage to Philip of Spain.

Henry III (1551-89), king of France, the last of the Valois, was the 3rd son of



HENRY III OF FRANCE

Henry II and Catherine de' Medici. He fought against the Protestants at Jarnac and Moncontour. After being elected king of Poland (1573) he succeeded to the Fr. throne on the death of his brother, Charles IX (1574). During his reign almost constant wars took place between the Catholics and the Protestants. At first H., though not without ability, left the gov. largely to his mother, Catherine

de' Medici. But his hatred of the Guises led him to plot the murder of Guise himself (1588). H., though a Catholic, next tried to consolidate his authority by coming to terms with the Protestants and recognising Henry of Navarre as his successor. But in Aug. 1589 he was assassinated by a fanatical friar named Clément belonging to the Guise faction.

Henry IV (1553-1610), king of France and Navarre, b. in the castle of Pau, the son of Antoine de Bourbon and Jeanne D'Albret, the heiress of Navarre. He was educ. as a Calvinist, and after 1569 was recognised as the Huguenot leader of France. H. fought at Jarnac, and led the Protestants in the religious wars raging in France at this time. In 1572 he married Margaret of Valois (q.v.), the sister of the king of France, but within a week followed the massacre of St Bartholomew (q.v.). H. temporarily renounced his religion and escaped to Alençon, where he repudiated that renunciation and again put himself at the head of the Protestants (1576). Later, Henry III recognised H. as his successor, and on Henry's death (1589) H. of Navarre became nominally the king of France. But the Catholic League, strengthened by support from outside, especially from Spain, was strong enough to force him to the S., and he had to set about winning his kingdom by military conquest. He was victorious at Ivry and Arques, but failed to take Paris. In 1593, however, declaring that Paris was worth a Mass, he permanently renounced Protestantism and his entrance into the Catholic Church secured for him the allegiance of the vast majority of his subjects, whilst the Edict of Nantes (1598) gave complete toleration to his former co-religionists, the Huguenots. The peace of Vervins ended the war with Spain, and H. was at last free to turn to the internal affairs of the country. With his minister, Sully (q.v.), he reformed the finances of the country, centralised the gov., and, above all, reduced the power of the nobles. Commerce and trade received great impetus, and the national debt was much reduced. Just after the coronation of the second queen, and while he was on the point of setting out to fight in Germany, he was assassinated by a religious fanatic. His popularity and ability were considerable; his notoriously lax private life did not prevent him from being one of France's outstanding rulers. See H. M. Baird, *The Huguenots and Henry of Navarre*, 1886; P. de Valisère, *Henri IV*, 1930; M. Saint-René Taillandier, *Henri IV*, 1938; R. Ritter, *Henri IV, le Béarnais*, 1945; M. Bourrier (editor), *Henri IV, peint par lui-même*, 1947.

Henry V, of France, see CHAMBORD, COMTE DE.

Henry I (876-936), surnamed the 'Fowler,' king, but not emperor, of Germany, the son of Otto, duke of Saxony, succeeded (918) to the Ger. throne on the death of Conrad I. He built up in Germany a strong and consolidated state, which contained Lorraine, and which held Hungary in check. He

instituted new methods of attack in warfare, and built large cities throughout Saxony and Thuringia. He was on the point of claiming the imperial throne when he d.

Henry II (973-1024), Ger. king and holy Rom. emperor, the son of the duke of Bavaria and the grandson of Henry the Fowler. He succeeded Otto III in 1002. H. had many rivals to contend against, but he secured Lombardy for himself, defeated the Poles, obtained the promise of the incorporation of Burgundy with the empire, drove back the Greeks in Italy with the help of the Normans, and greatly increased the power of the Church. He was crowned emperor in Rome, 1014. He encouraged the power of the Church in order to balance that of the nobility. He was interested in ecclcs. reform and was canonised in 1146.

Henry III (1017-56), holy Rom. emperor, son of Conrad II. He was successively king of the Germans, duke of Bavaria, and duke of Swabia, and finally became emperor in 1039, being crowned in 1046. He restored and kept up the prerogatives of the empire, and encouraged the movement towards the reform of the Church. He deposed the 3 rival popes, and placed Clement II on the papal throne. He forced the duke of Bohemia to acknowledge himself a vassal of the empire, and practically subdued Hungary. He encouraged art, architecture, and learning. One of his greatest achievements was the estab. of supremacy over the Normans in Italy.

Henry IV (1050-1106), Ger. emperor, son of Henry III, succeeded his father in 1056 at the age of 6. His mother at first acted as regent, but at the age of 12 the emperor fell into the hands of Anno, archbishop of Cologne, by whom he was educ. The position of Anno was rivalled by that of Adalbert, archbishop of Bremen, who also had great influence over H. He was declared of age in 1065, and soon had to deal with a rebellion in Bavaria which he was able finally to crush. But the outstanding event of H.'s reign was the quarrel with the papacy, known as the investiture dispute. The papacy, under Gregory VII (Hildebrand), was endeavouring to raise the moral tone of the clergy by securing the abolition of lay investiture, i.e. the appointment of the higher clergy by the civil authority. When H. refused to give up his investiture rights over the Ger. bishops, Gregory issued sentence of excommunication against him. H.'s supporters quickly fell away, and he saw that his only hope of success lay in surrender to the pope. He sought out the pope at Canossa, and there, after waiting for 3 days in the shirt of a penitent, amidst the snows of the Apennines, he was admitted to the presence and forgiven (1077). But he was still surrounded by enemies. Three anti-emperors were raised up in succession, and although H. won some successes, even his sons rebelled against their father. In 1084 H. entered Rome, deposed Gregory, and estab. a pope of his own

choice, who subsequently crowned him as emperor. But eventually he was made prisoner, and forced to abdicate. He escaped to Liège, where he was preparing another attack on the Ger. princes and the pope when he d. Sometimes pictured as a weak, struggling king, H. was in reality nothing of the kind, but a ruler whose main interest was in centralising his gov. and consolidating his power. It was this, and not any fundamental anti-clericalism, which involved him in his conflict with the pope, and in his struggles with his own vassals. See life by B. Schmiedler, 1927.

Henry V (1081-1125), holy Rom. emperor, was the 2nd son of Henry IV. His elder brother, Conrad, was deprived of his rights of succession because of his rebellion against his father. H. succeeded his father in 1106 and was crowned emperor in 1111. The bitter struggle over the investiture question continued, but eventually H. obtained a compromise of the whole question which was concluded at Worms in 1122. By this the papacy kept the right of election and consecration, but the church lands were invested by the emperor or his representative. He was the last of the Franconian dynasty, marrying Matilda, daughter of Henry I of England, but having no children.

Henry VI (1155-97), Ger. emperor, son of Frederick Barbarossa. He was made king of Germany during his early childhood (1169), and succeeded to the empire (1190) on the death of his father whilst leading the crusade. He married the Sicilian heiress, and his short reign was occupied by constant lt. wars.

Henry VII (c. 1275-1313), Ger. emperor, son of Henry II, count of Luxemburg. He owed his election in 1308, and his coronation at Rome in 1312, to the fact that there was no strong opposition, and that he was regarded as being unimportant. He enriched his own family with the lands of Bohemia, and attempted unsuccessfully to revive the old glories of the empire.

Henry, surnamed 'The Lion' (1129-95), the head of the Guelph family. He was duke of Saxony and Bavaria. He encouraged trade and commerce in Germany, built up ports on the Baltic, and founded the ln of Munich. So great, however, did his power become in Germany that a league of princes was formed against him, and he was placed under the ban of the empire (1180). See life by A. L. Poole, 1912.

Henry II (1333-79), king of Castile, surnamed 'El Bastardo,' was an illegitimate son of Alphonso XI, the Avenger. He led repeated rebellions against Pedro the Cruel, and was supported by the Fr. leader Bertrand du Guesclin. In spite of the opposition of the Eng. under the Black Prince, he was able to establish himself in 1369.

Henry III (1379-1406), king of Castile, surnamed 'The Sickly.' He succeeded his father, John I, at the age of 11, and the period of the regency was somewhat disturbed. He was able, however, to assert

his power, and under his personal rule the kingdom prospered. He married in 1393 Catherine of Lancaster. During his reign the Sanary Is. were taken by Castile.

Henry, Sir Edward (1850-1931), Commissioner of Police of the Brit. Metropolis. Studied for the Indian Civil Service and joined the NW. Prov. Service. In 1891 he was appointed inspector-gen. of police in Bengal and thus began the work in which he won distinction. His name will always be associated with the perfecting of the finger-print system of identifying criminals, which system he learned in India. In 1901 H. was appointed assistant-commissioner of police in London, and in 1903 commissioner. To him more than any other one man is due the efficiency of the modern C.I.D. He did much, too, to improve the status of the police, and inaugurated the Peel Training School, besides supporting the Police Orphanage.

Henry, Joseph (1797-1878), Amer. scientist, b. Albany, New York. He appears to have been the first to adopt insulated wire for the magnetic coil. He was the first to magnetise iron at a distance, and he was also the first to apply the telegraph to meteorological research. The unit of inductance in electricity is named after him. In 1832 he was appointed prof. of natural philosophy at Princeton and lectured on physics, mathematics, chem., mineralogy, geology, astronomy, and architecture. From 1868 he was chosen annually as president of the National Academy of Sciences, and he was also president of the Philosophical Society of Washington from the date of its organisation in 1871. He wrote *Contributions to Electricity*, 1839, and *Syllabus of Lectures in Physics*, 1844.

Henry, Matthew (1662-1714), Presbyterian minister, b. Broad Oak, Flint. His father, also a minister, was ejected by the Act of Uniformity; he possessed private means, and educ. his son well. The son relinquished legal studies for theology, and in 1687 he became minister of a Presbyterian church at Chester. His well-known exposition of the O.T. and N.T. (1710) is a commentary of a practical and devotional rather than critical kind. Its racy Eng. style won it popularity.

Henry, O., pen-name of **William Sydney Porter** (1862-1910), Amer. short-story writer, b. Greensboro, North Carolina. After a brief schooling, he worked in a drug store in his native ln until ill-health compelled him to try life on a ranch in Texas. In 1884 he secured a post in an Austin, Texas, bank, and later in the Texas Land Office. In 1891 he became teller in the First National Bank of Austin, and in 1894 bought and ed. a weekly pub., *Brann's Iconoclast*. Despite its rollicking humour, it was a failure, and in 1895 he began work on the *Houston Texas Post*. Fate seemed to have dealt him a final blow when, in 1896, he was arrested on the charge of embezzling some of the funds of the Austin bank. The episode was never entirely cleared up. What is known is that in 1898 P. was

sentenced to 5 years' imprisonment in the Ohio Penitentiary. This was reduced to 3 years by good behaviour. Within prison walls, now for the first time he began to settle down to the serious business of writing, drawing upon his knowledge of the queer people he had met in the SW. His MSS. were sent out under the nom-de-plume of O. Henry. His first piece of good fortune came when the *New York World* gave him a contract to supply 1 short story per week, at a fee of 100 dollars each. It was only some years later that the general reading public learned that O. Henry was Porter, the man who had been in prison. Despite his intemperate habits, he was a prodigious worker, and vol. after vol. of his short stories was issued, among them being *Cabbages and Kings*, 1904, *The Four Million*, 1906, *Heart of the West*, 1907, *The Trimmed Lamp*, 1907, *The Gentle Grafters*, 1908, *The Voice of the City*, 1908, *Options*, 1909, *Roads of Destiny*, 1909, *Strictly Business*, 1910, *Sizes and Sevens*, 1911, and *Rolling Stones*, 1913. Many of his stories are marked by their humour, others by their tenderness for the lowly and the unfortunate. And all of them are notable for the surprising unexpectedness of their endings. His kind of short story resembles that of his predecessors Mark Twain, Bret Harte, and Ambrose Bierce, and after him in the same tradition followed King Lardner and Damon Runyon. His collected works were pub. in 1917. See S. Leacock, *The Amazing Genius of O. Henry*, 1910; R. H. Davis and A. B. Maurice, *The Caliph of Bagdad—Arabian Nights Flashes of the Life, Letters, and Work of O. Henry*, 1931; and life by W. W. Williams, 1936.

Henry, Patrick (1736–99), Amer. statesman and orator, b. Studley, Virginia, the son of a well-educated Scotsman, his mother being of Welsh descent. As a lawyer he was brilliantly successful. In 1765 he became a member of the Virginian House of Burgesses, and led the political agitation which caused the revolution. In 1765 he declared the Stamp Act illegal. He was a member of the Continental Congress in 1774, of the Virginia Convention in 1775, and of the Ratifying Convention in 1788. He was governor of Virginia from 1776 to 1779 and from 1784 to 1786. He was known as the greatest speaker of his generation; perhaps his finest oration was that made in 1765, when the Virginian legislature was protesting against the obnoxious Stamp Act foisted on the Amer. Colonies by King George III and his Cabinet. H. declared that the people of the colony had all the rights of natural-born subjects of England and were bound to obey no laws except those of their own making. Then he continued in a famous passage: 'Caesar had his Brutus, Charles I. his Cromwell, and George III.—"Treason," was shouted by the loyalists. "George III," continued Henry, "may profit by their example. If that is treason, make the most of it." See life by W. W. Henry, 1891.

Henry, William (1775–1836), Eng. chemist; son of an apothecary and writer on chem. B. Manchester, and began to study medicine in 1795, took his doctor's degree in 1807, but ill-health prevented him from practising, so he devoted his life to chem. research, especially in regard to gases. His *Elements of Experimental Chemistry*, 1799, enjoyed considerable vogue, going through 11 eds. in 30 years.

Henry, practical unit of electric self-inductance. It was defined by the International Congress of 1908 as 'the induction in a circuit when an electromotive force induced in this circuit is one international volt, while the inducing current varies at the rate of one ampere per sec.' It derives its name from that of the discoverer of the property of inductance, Joseph Henry (1797–1878) (q.v.).

Henry Frederick, Prince of Wales (1594–1612), eldest son of James I of England by his wife Anne of Denmark, b. at Stirling Castle. On his birth he was created Duke of Rothesay, and in 1610 prince of Wales. He appears to have had strongly Protestant sympathies, but he d. of typhoid fever at the age of 18, soon after the death of Robert Cecil, and thereafter James became a close ally of Spain. He was buried in Westminster Abbey.

Henry of Huntingdon (c. 1080–c. 1150), Eng. chronicler who lived in the diocese of Lincoln. The only recorded incident in the chronicler's life is that he went with Archbishop Theobald to Rome in 1139, meeting Robert de Torigny at Bec. His *Historia Anglorum* covers the period from Julius Caesar until the accession of Henry II.

Henry the Minstrel, see HARRY, BLIND.

Henry the Navigator (1394–1460), 4th son of King João I of Portugal and the Eng. princess, Philippa, daughter of John of Gaunt. He early distinguished himself by his bravery, but he is best remembered for the services which he rendered to geographical discovery. His ships sailed to places on the coast of Africa hitherto unknown. In 1418 the Madeira Is. were discovered. He and his sailors then explored many points on the coast of Africa. He estab. a school for navigation and an observatory. During his lifetime discoveries were pushed on apace; his influence on the age which followed cannot be exaggerated. See J. P. Oliveira Martins, *The Golden Age of Prince Henry the Navigator*, 1891 (trans. 1914).

Henryson, Robert (c. 1430–c. 1506), Brit. poet. A Master of Arts, probably of some continental univ., he was a schoolmaster attached to Dunfermline Abbey, and also practised as a notary. Of the so-called 'Scottish Chaucerians' he most resembles their master. Versed in the learning and general culture of his day, he had a fine sense of form and a macabre humour, typically Scottish. Of his more important poems, *The Moral Fables of Esop the Phrygian*, 1571, containing that gem 'The Uplandis Mous and the Burges Mous' (Country and Town Mouse) shows him a born master of the beast-fable; *The*

Testament of Cresseld, 1593, is a sequel to Chaucer's *Troilus and Criseyde*, and was for long attributed to the Eng. poet; and *Robene and Makyne* was the first pastoral to be written in Britain. Others of his pieces are *Orpheus and Eurydice* and *The Garment of Gude Ladies*. There are eds. of his works by D. Laing, 1865; G. G. Smith, 1906-14; and H. H. Wood, 1933. See study by M. W. Stearns, 1949.

Henschel, Sir George (1850-1934), Ger. singer and composer, b. Breslau and naturalised in England in 1890. He studied at Leipzig and Berlin. He conducted symphony concerts at Boston, 1881-4; and went to London, 1885, where he directed London Symphony Concerts till 1886. He was knighted in 1914 after giving his last recital. He composed a number of instrumental works: *Stabat Mater* (Birmingham Festival), 1894, and *Requiem*; music for *Hamlet*, London, 1892; 3 operas and numerous songs. Wrote *Personal Recollections of Brahms*, 1907, and *Musings and Memories* (his own reminiscences), 1918.

Henselt, Adolf von (1814-89), Ger. pianist and composer, b. Schwabach,

Playhouse. Afterwards he acquired other theatres and it was in these that many famous Elizabethan dramatists first had their plays produced. See eds. of his diary by J. P. Collier (with a number of forged interpolations), 1845, and W. W. Greg, 1904-5.

Henson, Herbert Hensley (1863-1947), bishop, b. London; educ. privately, and at Oxford Univ., where he was a fellow of All Souls' College from 1884 to 1891—re-elected 1896. He was head of Oxford House, Bethnal Green, 1887-8; vicar and rural dean of Barking, Essex, 1888-95; incumbent of St Mary's Hospital, Ilford, 1895-1900; chaplain to the bishop of St Albans, 1897-1900; rector of St Margaret's, Westminster, and a canon of Westminster, 1900-12 (sub-dean, 1911-1912); dean of Durham, 1912-18. He was proctor in Convocation in 1903. If a forcible and arresting method of stating his views changed little throughout his ministry, the views themselves changed considerably. He was brought up in an Evangelical family. As vicar of Barking he was an Anglo-Catholic, welcomed as an occasional preacher in St Albans, Holborn. At Ilford, though still definitely a high churchman, he reduced the ceremonial he found. At St Margaret's he became a broad churchman and a defender of Modernism. By 1907 he regarded Anglo-Catholicism as a spent force. In 1908 he preached at Carr's Lane (Congregational) Church in Birmingham, defying Bishop Gore's inhibition. The rejection of the revised Prayer Book by the House of Commons in 1927 and 1928 transformed him from a defender of the estab. to a resolute and pugnacious advocate of the disestab. of the Church of England. His appointment in 1918 to the bishopric of Hereford was bitterly attacked by conservative churchmen. But in 1920 he was trans., without incident or protest, to the bishopric of Durham, where he showed himself a great pastoral bishop as well as a formidable controversialist. He retired in 1939 at the age of 76, but was recalled to a canonry of Westminster in 1940, though failing eyesight obliged him to resign in the following year.

The wide range of his intellectual powers was illustrated by his Rede lectures on *Byron* at Cambridge in 1924, and by his Gifford lectures (1935-6) on *Christian Morality*. His pubs. include sev. vols. of sermons: *Light and Leaven*, 1897, *Apostolic Christianity*, 1898, *Ad Rem*, 1900, *Godly Union and Concord*, 1902, *The Value of the Bible*, 1904, *Christ and the Nation*, 1908, *Westminster Sermons*, 1910, *The Creed in the Pulpit*, 1912, *Notes of my Ministry*, 1913, *War-Time Sermons*, 1915, *Christian Liberty*, 1918, *Last Words in Westminster Abbey*, 1941; essays and lectures: *Cross-Bench Views of Current Church Questions*, 1909, *Sincerity and Subscription*, 1903, *Religion in the 17th Century*, 1903, *Religion in the Schools*, 1906, *The Liberty of Prophecy*, 1909, *Puritanism in England*, 1912, *Anglicanism*, 1921, *Bishoprick Papers*, 1946; visitation charges: *Quo Vadimus*,



ADOLF VON HENSELT

Bavaria; educ. under the patronage of King Ludwig I at Welmar and Vienna. He made his debut in 1836, and in 1838 went to St Petersburg, where he obtained an appointment at court and an inspectorship at the Imperial Educational Estab. His work is small in quantity, but is distinguished by individuality. He wrote a pianoforte concerto in F minor, 2 sets of studies, *Poème d'Amour*, op. 3; *Ballade*, op. 31, etc.

Henslowe, Philip (d. 1616), theatrical manager; started his connection with the stage when in 1584 he bought land near what is now the S. end of Southwark Bridge on which stood the Little Rose

1924, *Disestablishment*, 1929, *The Oxford Groups*, 1933; and 2 vols. of ordination charges of abiding value: *Church and Parson in England*, 1927, *Ad Clerum*, 1937. His other works include: *The National Church*, 1908, *The Church of England*, 1939, and an autobiography, *Retrospect of an Unimportant Life* (3 vols.), 1942-50. Two vols. of his letters have been pub. since his death.

Henty, George Alfred (1832-1902), author, b. Trumpington, near Cambridge. He was educ. at Westminster School and Caius College, Cambridge, but left without taking a degree. On the outbreak of the Crimean War he volunteered for active service, and his letters describing the siege of Sevastopol were pub. in the *Morning Advertiser*. In 1865 he adopted the calling of a journalist, and wrote for the *Standard*, going upon many famous expeditions. His first boys' book appeared in 1868, *Out in the Pampas*, and was followed by *The Young Franc-Tireurs*, a tale of the Franco-Prussian War (1872). He also tried his hand at novel writing, but without success, his great forte being tales of adventure for boys, of which he wrote about 80. See life by G. Manville Fenn, 1907.

Henzada, tn of Burma, cap. of the H. dist. It is 66 m. WNW. of Pegu on the Irawadi R. at the apex of the delta proper. Thus it forms a trade centre for the people of the delta and those of the Lower Irawadi Valley. It is here that the Rangoon line to Bassein crosses the Irawadi by railway ferry. The dist. has an area of 2886 sq. m. and a pop. of 694,000. Pop. (tn) 28,560.

Hepatica, a genus of 3 perennials, akin to Anemone, natives of N. temperate zones. *H. triloba*, the common H., has sev. varieties; and with *H. acutifolia*, and *H. transsilvanica* are useful for early spring flowers in shady situations.

Hepatitis, see under LIVER.

Hepatus (Gk *hēpatos*, a fish, so named because of its being liver-coloured), name of a genus of malacostracan crustaceans belonging to the family Matutidae; the species are found on the Amer. coast, where they bury themselves in sand. They are characterised by a generally convex carapace, triangular frame, and claw-like endings to their legs.

Hepburn, James, see BOTHWELL, EARL OF.

Hepburn, Katharine (1909-), Amer. actress, b. Hartford, Connecticut. She made her first stage appearance in 1928 and started her screen career in 1933 with *A Bill of Divorcement*; then came *Christopher Strong*, and she won the Academy Award the same year for *Morning Glory*. Other early films include *Little Women*, *Mary of Scotland*, *Stage Door*, and *Bringing Up Baby*. She has since made sev. films with Spencer Tracy. In recent years she has played 'spinster' roles in *The African Queen*, *Summer Madness*, and *The Rain-maker*. Her stage appearances include *The Philadelphia Story* (which she later filmed), Shaw's *The Millionairess*, *As You Like It*, and a tour of Australia with the

Old Vic. She is equally at home in comedy and serious drama.

Hephaestion, companion and friend of Alexander the Great, was the son of Amyntor. He appears to have served with distinction at the battle of Arbela, and was one of the 7 select officers who were in close attendance upon the king's person. He was also commander of the horse-guards (*hetairoi*) for a time, and was entrusted with many important commands during the campaigns in Bactria, etc., and the expedition to India. He d. of a fever in 324 at Ecbatana.

Hephaestus, Gk god of fire and of the arts which need fire in their execution, son of Zeus and Hera. A weakling from birth, he was despised by his mother, who dropped him from Olympus into the sea. But he was rescued by Thetis and Eurynome, with whom he dwelt 9 years, making a variety of ornaments, among them the golden chair which he sent to his mother in revenge. Hera sat in it and was stuck until H. was brought back to Olympus by Dionysus, only to be hurled from the mt. this time by Zeus for championing his mother's cause. He settled for a time in Lemnos, but finally returned to Olympus and acted as mediator between his parents. All the masterpieces of metal in the stories of gods and heroes, the aegis of Zeus, the arms of Achilles, the sceptre of Agamemnon, the necklace of Harmonia, etc., were attributed to H. His workshops were located on Mt Olympus and in various volcanic isles, where he was helped by the Cyclopes. The Romans identified him with their god Vulcan (q.v.).

Heppenheim, Ger. tn in the Land of Hessen (q.v.), 34 m. SSE. of Wiesbaden (q.v.). It dates from Rom. times, and has the ruins of Starkenburg Castle (1064), a former stronghold of the archbishops of Mainz. There are quarries, and machinery manufs. Pop. 9000.

Hepplewhite, George (d. 1786), furniture designer, who had a business in London at St Giles, Cripplegate. His furniture in mahogany and satin-wood achieved a wide renown, especially his chairs, which are made with a shield- or heart-shaped back. A contemporary of Chippendale (q.v.), he was lighter in style. His *Cabinet-Maker and Upholsterer's Guide* was pub. in 1788. See K. W. Clouston, *The Chippendale Period in English Furniture*, 1897; R. Edwards, *Hepplewhite Furniture Designs*, 1948. See FURNITURE.

Heptane, name given to hydrocarbons of the paraffin series, consisting of 7 carbon atoms, chemical formula, C_7H_{16} . The 2 chief are (i) Normal H., boiling point, 98.3, sp. gr. at 20° 0.683, contained in petroleum and in the tar-oil from cannell coal. Along with octane, it forms the chief part of the solvent petroleum ether (ligroin). It is colourless and has a faint agreeable odour. It occurs in the nut pine (*Pinus sabiniana*) of California, from which a resin is obtained which, distilled with sulphuric acid, yields pure hydrocarbon. (ii) Methyl ethyl propyl methane—

the simplest paraffin with an asymmetric carbon atom, formed by the action of zinc ethyl on acetone chloride.

Heptarchy (from Gk *hepta*, seven, and *arche*, kingdom), name given to the 7 kingdoms, Kent, East Anglia, Sussex, Wessex, Northumbria, Mercia, and Essex, comprising early Saxon England. They were not contemporaneously distinct and independent kingdoms, but at some time between the 5th and 9th cents. they each had a separate existence. During the beginning of the 9th cent. Wessex became the strongest, and absorbed the other kingdoms.

Heptateuch (from Gk for seven and book), the first 7 books of the Bible (cf. Pentateuch), and in particular an A.-S. trans. of these books made in the 10th cent., copies of which are in the Brit. Museum and the Bodleian Library.

Heptoleic Acids, acids belonging to the fatty series, having 7 carbon atoms ($C_7H_{14}O_2$). The only important one is the normal heptoleic acid, or oenanthyloic acid, a colourless oily faintly smelling liquid, obtained by the oxidation of oenanthal or normal heptyl alcohol. The oenanthal is obtained by distilling castor oil under reduced pressure and fractionating the product.

Her Majesty's Theatre, Haymarket, was designed originally by Sir John Vanbrugh, and was opened as 'the Queen's' in 1705. In 1789 it was burnt down, and a second theatre erected which lasted from 1791 to 1867, when it, too, was utterly demolished by fire. It was in this building, which became known as the 'Italian Opera House,' that Madame Rachel appeared in 1841, and here Jenny Lind made her debut. The third theatre dates from 1872 to 1892. It was put to various uses; for Moody and Sankey hired it for revival meetings, and it was also the scene of promenade concerts, Wagner's operas performed by the Carl Rosa Company, and Fr. plays with Sarah Bernhardt in the cast. Coquelin *ainé* here played Cyrano de Bergerac in Rostand's play of that name. The fourth theatre was opened in 1897 with Sir Herbert Beerbohm Tree as proprietor and manager under the title of Her Majesty's Theatre, and upon the accession of King Edward VII the title was changed to His Majesty's Theatre. Under Tree's direction many representations of Shakespeare's plays were staged; while excellent performances of other dramatic works were given, including Stephen Phillips's *Herod* and *Ulysses*, and the Jap. play, *The Darling of the Gods*. *Joseph and His Brethren* appeared in 1913, *David Copperfield*, and Shaw's *Pymalion* with Mrs. Patrick Campbell and Tree, in 1914. The most remarkable run was made both during and after the First World War by *Chu-Chin Chow*, 1916-21, with Lily Brayton and Oscar Asche in the leading parts, which ran for 2238 performances. Other E. plays, such as *Cairo*, *East of Suez*, and *Hassan*, each ran for nearly a year. *Beau Geste*, and *Mozart* with Sacha Guitry and Yvonne Printemps as leading performers, were

notable theatrical events of 1929. Another long theatrical run was recorded by Noel Coward's operette *Bitter Sweet*, 1929-1931. Later successes are *The Good Companions*, 1931; *Conversation Piece*, 1934, with Yvonne Printemps; *Balalaika*, 1937; *The Lilac Domino*, 1944; *Brigadoon*, 1949; and *Teahouse of the August Moon*, 1954. Renamed Her Majesty's Theatre, 1952.

Hera. In classical times the main feature of this great Gk goddess was her patronage of marriage and female life. She was the chief pre-Hellenic deity of Argos, and it has been suggested that she may originally have been worshipped as the embodiment of the fruitful earth. In mythology she is the daughter of Cronus and Rhea, and sister and wife of Zeus. It was natural that the Greeks should eventually yield so powerful a goddess the honour of being wife to their own chief god. The character of H. is described by Homer as jealous and quarrelsome; the many stories which illustrate this unlovable quality may reflect an early conflict between her and worship and that of the newcomer, Zeus. She was worshipped especially at Argos, where stood her temple, the Heraeum (q.v.). But in addition to this famous sanctuary her cult was followed in Samos and elsewhere throughout the Gk world. See W. K. C. Guthrie, *The Greeks and their Gods*, 1950.

Heracleia, name given to a number of ancient Gk towns: (1) An ancient place of Pisatis in Elis, distant about 45 stadia from Olympia, noted for its medicinal waters. (2) A city of Magna Graecia, between the Rs. Aciris and Siris, on the Gulf of Tarentum. It was probably founded about 432 BC, and was first established on the ancient site of Siris. It rapidly rose to prosperity, and was selected as the place of meeting of the General Assembly of the Italian Greeks. During the war of Pyrrhus with the Romans, the consul Laevinus was defeated in 280 BC near this city. H. was still a flourishing and important town in Cicero's time, and was in existence much later still, but is now extinct. The 'Tabulae Heracleenses,' bronze tablets containing the *Lex Julia Municipalis* of 45 BC for the regulation of the municipal institutions of the towns throughout Italy, were discovered on this site. (3) *H. Minoa*, on the S. coast of Sicily, at the mouth of the R. Halycus, between Agrigentum and Selinus. It appears to have been a colony of Selinus, at first bearing the name of Minoa, but was seized c. 500 BC by Euryleon, a Spartan, who gave it the name of H. It was occupied by the Carthaginian gen., Hanno, in 260 BC, and in 256 BC was the scene of the defeat of the Punic fleet, and appears to have been one of the principal naval stations of the Carthaginians in Sicily. It was still flourishing in Cicero's time and is last mentioned by Ptolemy. (4) A town on the confines of Caria and Ionia at the foot of Mt Latmus. In its neighbourhood was a cave containing the tomb of Endymion. (5) *H. Pontica*, on the coast of Phrygia, situated a little to the N.

of the R. Lyæus. It had 2 excellent harbours, and was for a long time in a high degree of prosperity, maintaining a very prominent place among the Gk colonies in those parts. Its decline dated from about 54 BC, when it was partly destroyed by Aurelius Octavia in the Rom. wars against Mithridates. (6) Small tn on the coast of Syria, to the N. of Laodicea-ad-Mare. Sev. graves cut in rock and pieces of marble pillars, etc., have been found here. (7) Tn on the coast of Aeolis, opposite to Hecatonnesi. (8) Tn in Gallia Narbonensis which is mentioned in the hist. of Pliny. (9) Name sometimes given to the tn of Perinthus. (10) *H. Lyncestis*, chief tn of the prov. of Upper Macedonia, situated at the foot of the Candavian Mts. (11) *H. Sinica*, the prin. tn of Sintice, a dist. on the r. b. of the Strymon, in Thracian Macedonia. Demetrius, son of Philip V of Macedonia, was murdered here. (12) *H. Trachinia*, tn in the plain of Mt Oeta, a little W. of Thermopylae, founded about 426 BC by the Spartans. It was besieged by the Rom. consul, Glabrio, in 191 BC, after the defeat of Antiochus at Thermopylae.

Heracleia Lyncestis, see BITOLA and HERACLEIA, 10.

Heracleitus, more generally **Heraclitus** (fl. c. 500 BC), of Ephesus, surnamed **Phisicos**, Gk philosopher. He appears to have travelled in his youth, and on his return to Ephesus was offered the chief magistracy, which, however, he refused, likewise declining an invitation of Darius to visit his court, in order that he might live in retirement. His later years were devoted to his great philosophical work *On Nature*, in which he asserts that everything is in a state of eternal flux (*Panta rhei*), so that nothing can escape final destruction, not even the gods, and that the ultimate principle into which all existence is resolvable is fire. That fire changes continually to water, and then into earth, and that the earth changes back again to water, and the water to fire. This state of flux is a conflict of opposites, controlled by the Logos or Active Order, and H. believed that true Wisdom was the understanding of this order. It was not, however, the assertion of the reality of change which led Justin Martyr to speak of H. as a Christian before Christ. It was rather the discovery of rhythm or pattern in the process of change. H., having introduced into Gk philosophy the term logos (with which the Fourth Gospel opens), Justin Martyr confidently asserts: 'They who have lived in company with the Logos were Christians, even if they were accounted atheists; and such, among the Greeks, were Socrates and Heracleitus.' See G. O. Griffith, *Interpreters of Reality*, 1946; W. Jaeger, *Theology of the Early Greek Philosophers*, 1947; J. Burnet, *Early Greek Philosophy*, 4th ed., 1948.

Heraclæus, see HERCULES.

Heraclæus, son of Alexander the Great and Barsine, the widow of Memnon. He lived at Pergamum, and in 310 BC was brought forward by Polysperchon (a dis-

tinguished officer of Alexander the Great, who had been appointed in 319, on the death of Antipater, regent, and guardian of the king) as claimant to the Macedonian throne. He was, however, murdered by Polysperchon in 309, when the latter became reconciled to Cassander.

Heraclian, or **Heraclianus**, one of the officers of the Emperor Honorius (q.v.), to whom he rendered good service during the invasion of Italy by Alaric and the usurpation of Attalus. He revolted against Honorius in 412 and, proclaiming himself emperor, collected ships for the invasion of Italy. This he accomplished in AD 413, but was defeated and put to death. He is said to have murdered Stilicho in AD 408.

Heraclidae, descendants of Heracles (see HERCULES), especially those who invaded and took possession of the Peloponnesus. Zeus had intended Heracles to rule over the empire of Perseus, but by a trick of Hera (q.v.) Eurystheus took first place, Heracles becoming his servant. After his death, however, the H. asserted their claims, and, led by Hyllus, the son of Delanira, invaded the Peloponnesus. They were at first unsuccessful, but finally conquered Argos, Messenia, and Sparta, and estab. themselves there. The legend is an echo of the Dorian invasions, c. 1100 BC.

Heraclitus, see HERACLEITUS.

Heraclius (c. 575-642), Rom. emperor of the E., reigned from AD 610 to 642. He was the son of Heraclius the Elder, governor-gen. of Africa, and was b. in Cappadocia. In 610 he deposed Phocas and seized the imperial throne for himself. The E. empire was in grave danger from the Avars in the W. and the Persians in the E. H. defeated the Avars in 619, and next turned against the Persians, and in 627 decisively defeated the Persian king, Chosroes II, near Nineveh. But meanwhile ter. was being lost in the W., and internally the empire was torn by religious disputes. Before H. d., Syria, Palestine, Jerusalem, Mesopotamia, and Egypt had fallen under the dominion of the caliphs, H. doing little to prevent this.

Heraeum, temple of Hera (q.v.), between Argos and Mycenae, which, according to Strabo, served both tns until the 5th cent. BC, when Argos vanquished the Mycenaeans. In 423 BC the old temple was burnt down, and the Argives had a new one built by Eupolemos, in which was placed the gold and ivory statue of Hera, by Polyclitus. It was excavated by the Amer. Archaeological Institute and School of Athens, 1892-5.

Heraklion: 1. Dept. of Crete, Greece, situated in the centre of the is. Pop. 462,100.

2. Cap. of the above, also known as Candia (q.v.).

Herald, officer of the Royal Household, who acted, and on certain occasions still acts, as messenger between sovereigns and is entrusted with the management of state ceremonial, and who formerly superintended jousts, tournaments, and other public ceremonies and supervised coat

armour. He was attended by 'pursuivants,' who were learning the duties of the H. The chief of the H.s acquired the title of 'King of Arms,' and in England in the reign of Edward III there were 2 kings of arms, Norroy and Surroy (later Clarenceux); but in Henry V's reign a new king of arms was instituted called 'Garter King of Arms,' and he, together with the other kings of arms and H.s, was in receipt of certain fees connected with public ceremonials and creations of peers. The Eng. kings of arms and H.s are under the control of the earl marshal and still carry out state ceremonial such as the coronation. In 1483 Richard III incorporated the H.s into a college known as the Herald's College or College of Arms, and the business transacted by this institution is wholly connected with the tracing of genealogies and the granting of armorial bearings. The Scottish H.s were never under the Scots earl marischal. They constitute the 'Court of the Lord Lyon,' whose origin is lost in antiquity. It is one of the public courts of Scotland, is situated in H.M. Register House, Edinburgh, and deals with the heraldry, genealogy, and state ceremonial of that kingdom.

In anct Greece the H. (*kêrux*), whose person was inviolable, was of great importance. He summoned the assemblies of the people, at which he maintained order and silence, proclaimed war, and assisted at public banquets and sacrifices. So, too, in Rome the 'Apparitores,' whose duties were similar to those of the Gk *kêrux*, and the 'Fetiales' (q.v.), a special class chosen from the most distinguished families who managed the settlement of war and peace, were held in high esteem; only the 'Praecones,' who acted as 'criers' of public sales, etc., were despised.

'Herald of Wales,' illustrated topical weekly circulating over the whole of Wales, founded in 1804 as *The Cambrian*, the first newspaper in Wales. It deals with pictures, news, features, and sport of interest to Welsh people at home and abroad.

Heraldry. The term originally denoted the knowledge and business of the herald (q.v.), but it is now almost invariably applied to the science of armorial bearings. It has long borne this meaning, having supplanted the earlier name of armory. We find evidences of the use of some badge or sign to mark off a tribe, family, or individual in the earliest days, and in all parts of the world. Homer and Aeschylus describe the devices which the heroes bore on their shields, and antique vases of classical times show many such. But H., in its restricted sense of hereditary armorial symbols, was a later development than was once thought. The Bayeux Tapestry (q.v.), though it shows devices on the shields of the knights, proves also that these devices were not armorial bearings in the later sense; for in different parts of the tapestry the same knight is represented with different devices. The mixture of nations caused by the Crusades must naturally have brought about a more regular system

of insignia, and it is in the 12th cent. that we must seek the origin of H. The striking feature is the way in which the science spread throughout Europe within a few years of its inception. It instantly and adequately filled the need, so pressing in illiterate days, of a simple system for identification of those occupying positions in public life. Its use in civil and domestic life, both for decoration and, especially, for legal purposes on seals, for authentication of deeds, had more to do with its popularity than use in warfare. No effective substitute for it has ever been invented. The misuse of another's arms was treated as equivalent to forgery; so in order to be certain of acting correctly, it became the practice to consult the heralds, who were responsible for seeing that arms and banners displayed in the royal army were correct and known to the commanders. Identification of the unit in a feudal army depended solely on these devices. Early feudal magnates conferred arms on their vassals, usually based on their own arms; but, in cases of dispute, a grant from the king naturally prevailed over a grant from any subject, so the theory followed that valid arms must originate in a grant from the Crown.

The prestige attaching to armorial bearings lies in the recognition that a grant of arms infers a grant of 'nobility' (in the continental sense), i.e. gentility in Britain. Although it has been doubted whether arms necessarily connote gentility in England, in Scotland non-gentle people are expressly forbidden to bear arms at all. At the time H. arose, nobles alone required or had the opportunity of using arms. When a man acquired a feudal fief, or other public position, he either assumed or received arms as a matter of course. Corporate bodies and cities were soon by analogy held to be persons who either were, or could be, ennobled by grants of arms, and nowadays corporate H. is most important, because these bodies are very jealous of any infringement of their heraldic rights. Early bearings were simple in character, and were generally chosen so that they might suggest the name of the bearer. The castle of Castile and the bear of Bern are well-known examples of this so-called canting H. The heraldic movement began in France and Germany, and soon spread to Britain and the rest of Europe. In England it developed rapidly during the 13th and 14th cents., reaching its climax in the reigns of Edward III and Richard II. In the 19th cent. a revival commenced, and the historic, scientific, and artistic importance of heraldry was realised. It has once more attained a level worthy of the esteem in which it was held in the Middle Ages.

H. is still a living science, and in England the Herald's College (q.v.) continues to exercise its functions. In Scotland, H. has assumed a more important standing than in any other nation, largely owing to the clan system, with its veneration for lineage and kinship (see LYON KING OF ARMS).

In 1672, all older registers were superseded by the 'Public Register of All Arms and Bearings in Scotland,' in which all existing arms were ordered to be registered within a year, as well as future grants. The striking feature of Scots H. is that there are relatively few surnames in Scotland, and therefore comparatively few basic coats-of-arms. The science has largely developed by differentiating these basic arms for the numerous off-shoots from the main lines of clans and families. These 'matriculations' are registered at lower fees on proof of the relationship. If this cannot be estab., Letters Patent are issued.

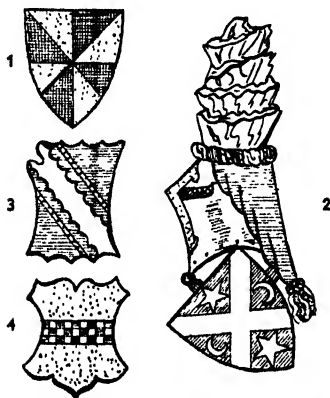


FIG. I. THE SHIELD AND ITS PARTS

The Shield and its parts.—At different periods the escutcheon or shield, on which in a coat-of-arms the charges are placed, has varied considerably in shape. The simplest form, and that most commonly used, is shown in Fig I (No. 1, Campbell). These shields were often placed at an angle, as in No. 2 (Haig of Bemersyde), when surmounted by a helmet or crest. This position is known as *couché*, and is much the most artistic. It is that used in the stallplates of the Knights of the Garter and the Thistle, and is the natural angle at which a shield hung from its *guzge* or strap. In later times more florid forms were used, such as are represented in No. 3 (Fortescue); such shields are of the late 14th or 15th cent., and their somewhat square shape is noticeable. In the 16th cent. an even more florid, but symmetrical, type, No. 4 (Stewart), became popular. The notch on the dexter chief of No. 3 represents the lance rest. A widening of the base of the shield became necessary as quartering became more common.

In order that coats-of-arms may be quickly and accurately described, or, as it is technically called, *blazoned*, different names have been given to the different

parts of the escutcheon. The points thus named are as follows (Fig. II): A is the dexter chief point; B the sinister chief; C the middle chief; D the dexter base; E the sinister base; F the middle base; G the honour point; H the fesse point. To these we may add I, the nombril or navel point; K, the dexter flank; and L, the sinister flank. The upper part of the escutcheon is known as the chief, the lower as the base. The dexter (right) and sinister (left) sides of the escutcheon are named in relation to the wearer, not from the viewpoint of the spectator.

Tinctures.—The surface of the escutcheon on which a charge is placed is

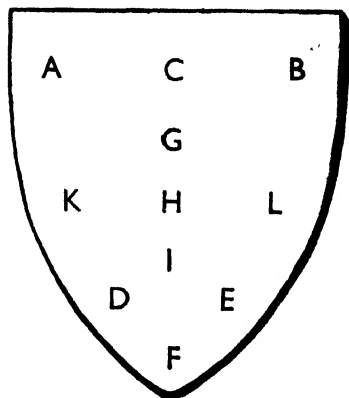


FIG. II. BLAZON

termed the field, and coats-of-arms are distinguished not only by their charges, but also by the colouring of this field. This is technically termed the *tincture* of the field, and may represent a metal, a colour, or a fur. The names of these are derived from Norman Fr., as is most of the heraldic nomenclature. The metals are 2 in number: Or (gold) and Argent (silver). They are represented in engravings, the one by dots, and the other by a plain field (see Fig. III, Nos. 1 and 2). There are 5 colours, viz. Azure (blue), represented in engraving by horizontal hatching; Gules (red), represented by perpendicular hatching; Sable (black), by perpendicular and horizontal hatchings crossing each other; Vert (green), shown by diagonal lines drawn from dexter chief to sinister base; Purpure (purple), represented by diagonal hatchings from sinister chief to dexter base. These terms are also used to describe the charges. If the charge is represented in its natural colouring, none of these conventional tinctures being used, it is said to be proper. Eight furs are also used as tinctures for fields. Of the 2 most common, Ermine is represented by black marks resembling those of the

fur itself on a white ground (Fig. III, No. 8). Vair is said to be derived from the fur of a squirrel. It is represented by conventional bells arranged in horizontal rows, as shown in Fig. III (No. 9). Another fur, called Potent, is shown at No. 10.

Other methods of dividing a shield are also shown in Fig. IV. No. 2 represents a div. per fesse; No. 3, per bend; No. 4, per cross or quarterly; No. 5, per saltire; No. 6, per chevron. A quartered shield has sometimes one or more of its divs.

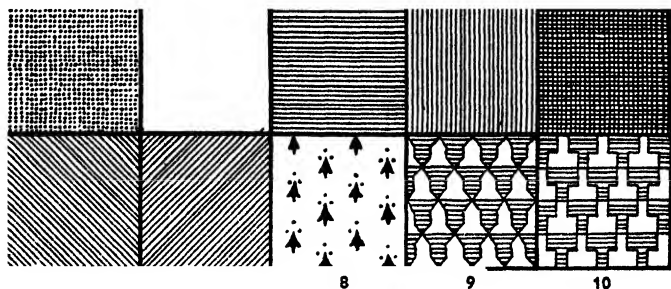


FIG. III. TINCTURES

It is a rule of Eng. H. that metal must not rest on metal or colour on colour, except where the field is parti-tinctured. This is one of the prime rules of the science—yet it has sometimes been violated designedly, in order to honour a grant by drawing attention to the rule.

again quartered, and is described as counterquartered or quarterly-quartered. The large divs. are then known as the grand quarters. Thus in No. 7, the top right and bottom left are counterquartered, the other divs. being grand quarters.

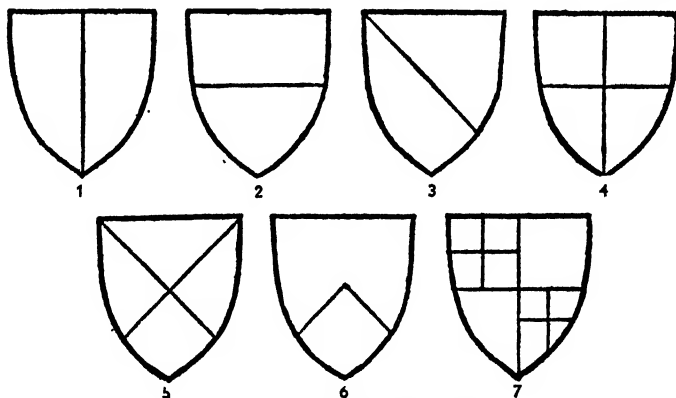


FIG. IV. DIVISIONS OF FIELDS

Divisions of fields.—Fields are divided in numerous ways, so that the different parts may have different tinctures and perhaps bear different charges. A shield divided as in Fig. IV, No. 1, is said to be divided per pale, and is described as party. A pale is a perpendicular strip (*see below*), and an escutcheon bearing 3 pales of one tincture upon a field of another tincture, making 6 pales in all, is blazoned as paly.

Ordinaries.—The title ordinaries is given to certain of the earliest devices of H. They are marked by simplicity of form and are generally formed with straight lines. Occasionally they appear alone, but more commonly they appear in combination with some other figures, or are themselves charged. The chief heraldic ordinaries are 8 in number, but many of them have diminutive forms.

(1) The Chief is the upper part of the shield marked off by a line of div. According to heraldic books, the part marked off should be one-third of the length of the shield, but in practice the width varies, being made smaller if the chief is uncharged. A diminutive form of the chief is the Fillet, which should occupy one-fourth of the chief. (2) The Fess is a horizontal band across the centre of the shield occupying one-third of the depth, though it and the pale, which should also occupy a third of the whole space, actually vary, as does the chief. When this band does not lie across the centre of the shield it is called a bar (diminutive 'barrulet'). (3) The Pale has already been explained as a vertical band in the centre of the field. It is not common. (4) The Cross appears in numerous forms. The cross should occupy one-fifth of the field unless charged, when it occupies one-third. (5) The Bend is a band crossing the shield from the dexter chief to the sinister base. It occupies one-fifth of the field unless charged, when it fills one-third. The bend sometimes appears over other charges, and in a narrower form, sometimes called the Baston, it was commonly placed over the arms of a younger son. There is no such thing as a 'bar-sinister' in H., but a bend or baston sinister is a mark used to indicate illegitimacy—usually in the case of royal bastards. All charges placed on a bend are put bendwise, that is to say, they are slanted at the same angle as the bend. Modern H. has adopted another device in place of the bend sinister—the hordure wavy—to denote bastardy in England; while in Scotland it is denoted by the bordure compey. In England alone the lesson is driven home by means of a bendlet sinister wavy, or a pallet wavy, on the crest. (6) The Chevron is formed from 2 bands starting respectively from dexter and sinister base and coming together about the fess point. It should occupy one-fifth of the field. (7) The Pile is a triangular wedge-shaped figure generally commencing at the middle chief and tapering downwards. (8) The Quarter is formed of the first quarter of the shield cut off by lines. It is now very uncommon, having been supplanted by the canton, which is smaller but of the same form.

Common charges.—These include the escutcheon or shield used as a charge; the Tressure, a narrow border which follows the edge of the field (In Scotland a double Tressure Fleury Counterfleury is a high honour and never granted except by Royal Warrant, being part of the Scots Royal Arms); the Bordure, a border marked of a different tincture from the shield itself; the Flaunces, formed by the 2 sides of the shield cut off by curved lines; the Fret, formed by diagonal lines crossing or interlacing. A field entirely covered by a fret is described as fretty. A gyronny field is one divided both per fesse and per saltire. The Lozenge has an elongated form termed the fusil. Billets are oblongs set vertically. Roundels

may be of various colours; they have received different names according to the colours. Thus the bezant is or; the plate, argent; the hurte, azure; the torteau, gules; the pellet, sable; and the pomme, vert. The first 2 of these and the fountain, which is a roundel divided horizontally by wavy lines, are represented as flat, but the others are shaded to appear spherical. The ring or annulet is also a common charge. Under this head also are grouped representations of animals, birds, monsters, trees, plants, etc., and all common objects. The charges are described according to the position or condition of the charge represented. The lion, in particular, being the most popular beast in medieval H., is found in many positions. Thus it is described as a lion rampant, rampant gardant, rampant regardant, passant gardant, salient, sejant, couchant, etc. We have also such forms as the demilion and the lion's head erased. Other common charges are the stag, leopard, eagle, dolphin, griffin, escallop, rose, fleur-de-lys, mullet, estoile (star), and various kinds of trees. The demi-lion, demi-man, demi-rose, etc., show the figure couped or cut off in the middle.

Differencing.—The undifferenced arms, i.e. the whole coat, is borne only by one person, and is by him handed on to his heir. Until he succeeds to the undifferenced coat-of-arms, the heir wears it with some difference or mark of cadency, the commonest being the addition of a label. Younger sons also differenced the paternal arms, and this was done in various ways, sometimes by a change of tincture, or by the imposition of a bend, or by surrounding the arms with a bordure.

Marshalling.—Marshalling arms means combining sev. independent coats on one shield, and is used chiefly to denote marriage, or the representation of other families through heiresses. At first, a woman used the undifferenced arms of her father, and the shields of husband and wife were placed side by side, termed accollées. Later on they used one shield, divided per pale down the centre, the husband's arms being placed in the dexter half of the shield, the wife's in the sinister half. Official arms, such as those of Eng. bishops and certain high officials, are also impaled with the family arms of the prelate or officer. In this case the official arms are on the dexter side. The practice of quartering became common in the 14th cent. When a man inherited arms from an heiress mother, it was often desirable or necessary to display both coats; and where a family had married successive heiresses, it was convenient to divide the shield in four or more divs., and put the arms of the successive heiresses in each. Quarters are numbered: (1) dexter chief; (2) sinister chief; (3) dexter base; (4) sinister base. If it is necessary to quarter many arms, the shield is divided into more compartments by vertical lines, but the divs. are still called by the same name. In England, the shield may be divided into any number of quarterings,

but in Scotland a shield can only have 4 quarterings. Scots quartering added requires a re-matriculation. An early example of quartered arms may be seen in those of Isabella, wife of Edward II, who bore in the 4 quarters the arms of

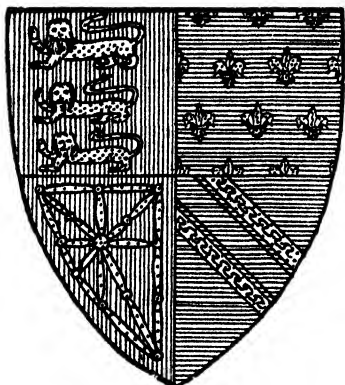
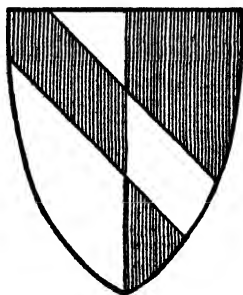
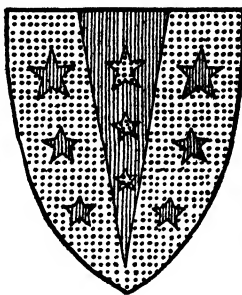
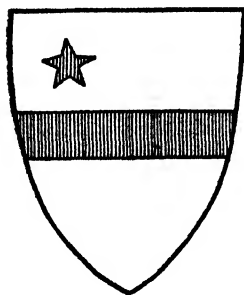


FIG. V. ARMS OF QUEEN ISABELLA

England, France, Navarre, and Champagne (see Fig. V). A husband may always impale his wife's arms, whether she is an heiress or not, but in England the practice has arisen of depicting the arms of an heiress wife upon an inescutcheon of

other conventions to be observed, chiefly as regards the order. First is named the field, in one word if it be of one tincture. If it be a quartered field, the tinctures are named in order, preceded by the manner of partition. Then follow the charges, the most important being named first. If a charge is in any position other than the centre of the field its position is described. Thus Odingseles bore the arms depicted in Fig. VI, No. 1, which are blazoned as 'argent a fesse gules with a mullet gules in the quarter.' According to one late and foolish convention, which is now being abandoned, repetition is avoided, and the name of a tincture is not repeated except for clarity. Thus the arms of Robert de Chandos, differenced with mullets as a mark of cadency, are shown in No. 2 of Fig. VI. These are blazoned 'or a pile gules charged with three mullets of six points gold between as many others of the second.' The ordinary, however, is named last if it surmounts another charge. When a bend or fess crosses a field of 2 tinctures, it is often counter-changed, i.e. the colour of the bend, etc., is reversed as it crosses the field. This can be seen from the arms borne by the poet Chaucer (No. 3), 'per pale, argent and gules, a bend counterchanged.'

The Helmet.—Above the shield is set a helmet: gold with grills for sovereigns; silver with grills for peers; steel with open visor for knights and baronets; steel with closed visor for esquires and gentlemen. The Royal Helmet is always shown affronté, i.e. full face. In England there are 17th-cent. rules that peers', esquires', and gentlemen's helmets must be shown in profile, knights' and baronets'



2

3

ARMS OF ODINGSELES, ROBERT DE CHANDOS, AND CHAUCER

pretence, viz. a small shield in the middle of the husband's shield. The arms upon the inescutcheon become a quartering in the next generation.

Blazoning.—To blazon a coat-of-arms is to describe it accurately so that it could be reproduced by anyone having a knowledge of H. Besides the conventional terms of which the most important have been explained above, there are certain

full face. In Scotland, provided the correct type of helmet is displayed, it may be shown at whatever angle best suits the crest.

To mitigate the heat of the sun upon a helmet, it was covered by a cloth cap, which became jagged in battle, and in this form is known as the mantling or lambrequin. Its lining is the colour of the prin. 'metal' of the shield, its outside the

prin. 'colour,' but peers' mantlings are lined ermine, and in Scotland are crimson outside. At the joint between the mantling and the crest is a twisted skein of silk of the prin. colour and metal of the arms, termed the wroath, or torse. Above this is the crest, which originated in a fan or plume of feathers, but in the 15th and 16th cents. developed into a weighty device moulded out of leather or wood, more frequently used at tournaments and ceremonial than in warfare. 'Heraldic stationers' invariably draw the helmet and crest much too small in relation to the shield; the actual proportions as used and drawn in the 14th and 15th cents. will be seen in Fig. 1, No. 2.

Supporters.—Peers, and in Scotland chiefs of clans and a few others, are entitled to have their shield and helmet supported by 2 creatures (usually human beings or animals). They descend only to the peer or chief for the time being, and not to the younger sons. Wives and widows of the peer or chief may use them, but not daughters. In Scotland they are borne also by the son and heir to whom they will eventually pass. Sometimes they pass to an heiress of entail in Scotland. A shield with its helmet, mantling, crest, and supporters forms a group known as an Achievement.

Royal Arms.—These 'ensigns of sovereignty,' or 'symbols of public authority,' are governed by different rules from other arms. They do not pass by succession, even to younger sons of the sovereign, such princes each receiving specially differentiated versions by Royal Warrants directed to the Earl Marshal or the Lord Lyon. Where a king succeeds to the sovereignty of more than one state, a quartered royal coat-of-arms results. Thus, the Brit. Royal Arms now include quarters representing the sovereignty of England, Scotland, and Ireland. Until 1800, the kings of England claimed to be, and styled themselves, kings of France, and therefore quartered the Fr. lilies. From 1714 until 1837, the Brit. sovereign was also king of Hanover, the arms of which were placed on an inescutcheon, but under the Salic Law that kingdom did not pass to Queen Victoria, and accordingly the arms of Hanover were dropped. The Prince of Wales bears the Royal Arms, differentiated by a silver label, as heir apparent, and with an escutcheon of the arms of the principality of Wales. The Royal Arms of each sovereign state indicate the public authority of its ruler; that is, the 3 leopards of England, the treasured lion rampant of Scotland, and the blue field and golden harp of Ireland indicate the public authority of the ruling power within each state; the national flags (St George's cross for England, St Andrew's saltire for Scotland, St Patrick's cross for Ireland) indicate national identity. Similarly, the quartered Royal 'Standard,' properly Banner, is the insignia of the ruling authority—the Crown—in Great Britain; the joined crosses, or Union Jack, the national flag, indicating Brit. national identity.

Heraldic Flags.—Armorial bearings were not confined to the shield or tabard worn over the armour, which was the literal 'coat-of-arms' often seen on ancient sepulchral brasses, but were also used in flags or banners, a term which refers to a rectangular flag displaying the coat-of-arms, whilst pennons and standards are long, pointed flags usually displaying the badge and motto only.

Use of Heraldry.—H. is used in almost every conceivable way: in architecture, stained windows, and carving in wood and stone, and on furniture, book-plates, book stamps, silver-plate, seals, signet rings, and stamped or tooled leatherwork.

Inland Revenue.—In Great Britain there is an ann. duty of 1 guinea for use of armorial bearings, 2 guineas for use on a vehicle. Payment of these duties does not give the right to appropriate a coat-of-arms, and is equivalent merely to a licence to keep a dog, gun, or motor. A coat-of-arms must be obtained through Garter, Lyon, or Ulster, and in Scotland payment of the ann. duty is no defence in a prosecution for use of unregistered arms. See further under LYON KING OF ARMS. See J. Balfour Paul, *Heraldry in Relation to Scottish History and Art*, 1899; A. C. Fox-Davies, *The Art of Heraldry*, 1905, and *Complete Guide to Heraldry*, 1925; Sir W. St John Hope, *Heraldry for Craftsmen and Designers*, 1906; J. H. Stevenson, *Heraldry in Scotland*, 1914; C. W. Scott Giles, *The Romance of Heraldry*, 1929, *Civic Heraldry*, 1933, and *Shakespeare's Heraldry*, 1939; D. L. Galbreath, *Papal Heraldry*, 1930; A. Wagner, *Heralds and Heraldry*, 1938; C. and A. Lynch-Robinson, *Intelligible Heraldry*, 1948.

Heralds' College, or College of Arms, corporation founded by Richard III in 1483. It is presided over by the Earl Marshal (whose office is hereditary in the family of the duke of Norfolk), and consists of the Garter Prin. King of Arms of England; Clarenceux, King of Arms S. of Trent; Norroy, King of Arms N. of Trent who now also holds the office of Ulster King of Arms; the heralds named Chester, Windsor, Lancaster, Richmond, York, and Somerset; and 4 pursuivants, Bluemantle, Portcullis, Rouge Dragon, and Rouge Croix. They at first resided at Cold-harbour, or Pulteney's Inn, in the par. of All Saints, but in 1554 Queen Mary gave them a building opposite St Benet's, which was rebuilt after being burnt down in 1666. The heralds-extraordinary appointed by the Crown are not members of the H. C. The H. C. has no jurisdiction in Ireland, where Ulster King of Arms controls heraldry, nor in Scotland whose heraldry is under control of the Lord Lyon King of Arms (see LYON).

Herat: 1. Fort and second largest city of Afghanistan, in the prov. of H., on the R. Heri Rud, about 410 m. W. of Kabul. It is situated in a valley about 120 m. long by 12 m. wide, and is built on an artificial mound nearly 1 m. sq. and 55 ft in height. It was for a long time the cap. of the extensive empire ruled by the descendants

of Timur; but its chief importance now lies in its strategic position, it being regarded as the gateway to Afghanistan and India. The manufs. include silk, leather, and woollen goods, and carpets. Oil has been found in the vicinity. Pop. 85,000.

2. Prov. of NW. Afghanistan. Pop. 770,000.

Hérault: 1. Dept in the S. of France, on the gulf of Lion, formed of part of the anct prov. of Languedoc. In the N. and W. are ridges of the Cévennes, and in the NE. are the Garrigues, forested limestone hills. Separated from the sea by a narrow strip of land are sev. long lagoons (see THAU, ETANG DE). The dept is watered by the Aude, Orb, and Hérault. A great quantity of wine is produced, one-third of the surface of the dept being planted with vines. Cereals, fruit-trees, and vegetables are cultivated, and silk-worms are reared. Coal, iron, bauxite, and salt are found. The chief manufs. (apart from wine) are chemicals and textiles. The prin. tns are Montpellier (the cap.), Béziers, and Lodève (qq.v.). Area 2402 sq. m.; pop. 471,450.

2. Riv. of France, which rises in the S. Cévennes (q.v.), and flows in a generally S. direction across the dept of H. to the Mediterranean near Agde (q.v.). Length 90 m.

Herb Christopher, see BANEERRY.

Herbaceous Border, see GARDENING.

Herbarium, also called *Hortus siccus*, or dry garden, is a systematically arranged collection of dried plants, intended to facilitate the study of botany. The specimens are prepared by being laid between sheets of special absorbent paper and afterwards subjected to pressure; certain flora, such as orchids, etc., have to undergo special preparation because their succulence admits only of slight pressure, and they are sometimes placed in hot sand, or suspended before a fire. Mosses, lichens, and similar plants can be preserved dry in packets; when moistened they regain their appearance in life. The largest H. in the world is contained in the Royal Botanical Gardens at Kew, which is constantly receiving new additions from the Commonwealth and as the result of botanical expeditions and explorations. The collection made by Carl Linnaeus has been the property of the Linnean Society of London since 1828. Marlborough College contains the Wedgwood collection of dried plants, while the H. of Manchester Museum was presented to it in 1904 by its founder, J. C. Melvill. Paris contains a notable H. in the Jardin des Plantes, while the H. in Berlin is attached to the univ. Brussels, Geneva, Vienna, and Leningrad also have good herbaria. In South Africa the National H. is estab. in Pretoria; in India, in Calcutta; and in Australia, in Melbourne. The U.S.A. boasts sev. herbaria, containing mainly flowers of America; among these are the Gray H. (founded by Asa Gray) of Harvard Univ., and the H. in the New York Botanical Garden. The Field Museum of Natural Hist. in Chicago (founded by Marshall Field in 1893) also contains a

very carefully classified H. See C. F. Millsbaugh, *Herbarium Organization*, 1925.

Herbart, Johann Friedrich (1776-1841), Ger. philosopher and educationist, b. Oldenburg. He began to study logic at the age of 11 and metaphysics when 12, and at the gymnasium of his native tn, which he entered in this thirteenth year, his favourite studies were physics and philosophy. In 1794 he left this institution and went to the univ. of Jena, becoming the pupil of Fichte, but he soon began to disagree with his master. Leaving the univ. in 1797, he acted as private tutor for 2 years, and then went to Bremen to study philosophy, publishing his views on educational reform in 1801, *Ideen zu einem pädagogischen Lehrplan für höhere Studien*. This was followed in 1802 by his essay on Pestalozzi's work, *Wie Gertrud ihre Kinder lehrt*, as well as by a treatise on the same author's *Idee eines A B C der Anschauung*. The same year he went to Göttingen and pub. *A B C der Anschauung*, 1802, *Die ästhetische Darstellung der Welt als das Hauptgeschäft der Erziehung*, 1804, *Standpunkt der Beurtheilung der Pestalozzischen Unterrichtsmethode*, 1804, *Allgemeine Pädagogik* (his prin. work on education), *Hauptpunkte der Metaphysik*, 1806, *Hauptpunkte der Logik*, 1806, and *Allgemeine praktische Philosophie*, 1808. In 1809 he accepted the chair of philosophy at Königsberg, and pub. in 1812 *Lehrbuch zur Einleitung in Philosophie*, his best known and most widely read book. His chief psychological work, *Psychologie als Wissenschaft neu begründet auf Erfahrung, Metaphysik, und Mathematik*, appeared in 2 parts in 1824-5, and the system of metaphysics on which the fundamental principle of his psychology rested was pub. in 1828-9, *Allgemeine Metaphysik nebst Neu-Anfängen der philosophischen Naturlehre*. In his *Psychologie* H. rejects the doctrine of mental faculties as one refuted by his metaphysic, and endeavours to prove that all psychical phenomena whatsoever proceed from the action and interaction of elementary ideas or presentations (*Vorstellungen*). He also pub. in 1831 *Encyclopädie der Philosophie*. In 1833 he returned to Göttingen, where he spent his last years, and wrote in 1835, as a supplement to *Allgemeine Pädagogik*, *Umriss pädagogischer Vorlesungen*. H. is important as being the only modern thinker who has not treated education casually in his works; indeed, for him it was the starting-point and end of all his investigations. He imbibed the ideas of Pestalozzi, his friend, and did much to make education and educational methods a science. As to his philosophy, which was based on that of Kant, the cardinal point of his ontology is that it is a 'pluralistic realism.' As a metaphysician H. proceeds from what he calls 'the higher scepticism' of the Hume-Kantian sphere of thought, the source of which he sees in Locke's perplexity over the idea of substance. By this scepticism the real validity of even the forms of references

can be questioned in view of the contradictions they are seen to involve; but that these forms are 'given' to us as truly as sensations are follows incontestably, since we can as well control the one as the other. Amongst the post-Kantian philosophers H. ranks next to Hegel in importance, apart altogether from his great contributions to the science of education. See H. M. and E. Felkin, *Introduction to Herbert's Science and Practice*, 1895; J. Adams, *The Herbartian Psychology Applied to Education*, 1898; F. H. Hayward, *The Student's Herbart*, 1902; A. Darroch, *Herbart and the Herbartian Theory of Education*, 1903; J. Davidson, *A New Interpretation of Herbart's Psychology*, 1906.

Herbelot de Molainville, Barthélemy d' (1626-95). Fr. Orientalist. In 1692 Louis XIV appointed him prof. of Syriac in the Collège Royal. His epoch-making *Bibliothèque orientale* contains long articles (in alphabetic order) on Islamic religion, hist., geography, ethnography, and literature. This *opus magnum* was pub. posthumously in 1697, reprinted in 1776, re-ed. (and revised) in 1777-82. It was also trans. into German.

Herbert, name of a family prominent in Brit. hist., who came over to England with the Conqueror (1066). H. Fitz-Herbert (H. of Winchester) was chamberlain and treasurer to Henry I (1100-35). The 1st earl of Pembroke (created 1468) was a member of this family, and the title was revived for Sir W. Herbert (c. 1501-1570) in 1551. The 4th earl became also earl of Montgomery (1605). Some generations later the H. family diverged into sev. distinct branches, including the lines of the earls of Powis, of the Lords H. of Cherbury, of the H.s of Muckross (Kerry, Ireland), and of sev. untitled branches in England, Wales, and Ireland. The earls of Carnarvon are descended from the 8th earl of Pembroke (1656-1733), who held office under Anne.

Herbert, Sir Alan Patrick (1890-), novelist, poet, and politician, b. London, son of an official of the India Office. He was educ. at Winchester and New College, Oxford. A modern Euphuist in verse and a satirist, he contributed humorous verse to *Punch* and the *Sunday Graphic*. His novels include *The Water Gypsies*, 1922, *Trials of Topsy*, 1932, *Topsy*, M.P., 1932, and *Holy Deadlock*, 1934, a propagandist effort, aimed at anomalies in the law of divorce. In 1935 he was elected M.P. (Independent) for Oxford Univ. and, in 1937, greatly distinguished himself by securing the passage of an Act radically amending the divorce laws. With T. F. Dunhill, he produced a successful musical comedy, *Tammy Towers*, 1931, and revues *Big Ben*, 1946, and *Bless the Bride*, 1948. Others of his books are *She Shanties*, 1927, *Misleading Cases*, 1937, *Plain Jane*, 1931, *Less Nonsense*, 1944, *Point of Parliament*, 1946, and an autobiography, *Independent Member*, 1950. He was knighted in 1945.

Herbert, Edward, 1st Lord Herbert of Cherbury (1583-1648), philosopher, his-

torian, and diplomatist, b. Eyton-on-Severn, near Wroxeter. He was educ. at Univ. College, Oxford (1595-1600), and while there taught himself Fr., Italian, and Spanish, besides gaining some proficiency in music, and becoming a good rider and fencer. Created K.B. at James I's coronation, H. was sheriff of Montgomeryshire in 1605. In 1608 he set out on a foreign tour, and became friendly with the grand constable of France, de Montmorency, and Casaubon. In 1614 he joined the army of the prince of Orange as a volunteer, and stayed abroad 2 years, visiting the Elector Palatine and the duke of Savoy. On his return he became intimate with Donne, Carew, Ben Jonson, and Selden, all of whom held him in high esteem and encouraged him to pursue his studies; but in 1619 he was again taking part in public affairs, and was made Eng. ambas. at Paris. While holding this post he tried to bring about a permanent alliance between England and Holland, endeavoured to gain Fr. support for the Elector Palatine on the outbreak of the Thirty Years War, and suggested a marriage between Prince Charles and Henrietta Maria, but in 1621 he was recalled for quarrelling with De Luynes. He was created Lord Herbert of Cherbury in 1629, and in 1632 a member of the council of war, being reappointed in 1637. He aimed at neutrality during the Civil war, but was forced to admit the parl. force into Montgomery in 1644. H.'s philosophical work, *De Veritate*, 1624, is important as being the earliest purely metaphysical treatise written by an Englishman, and is interesting for its theory of perception. He makes the mind consist of faculties which are reducible to 4 classes, of which the chief is natural instinct (practically the Aristotelian *nous*), the other 3 being conscience, sensation, and reason. He continued his theory in *De Causis Errorum*, 1645, and completed his religious views in *De Religione Gentilium*, pub. in 1663 (Eng. trans. 1709). He makes all religions, Christian and pagan, resolvable into the 5 innate ideas, that there is a God, that He ought to be worshipped, that virtue and piety are essential to worship, that man ought to repent of his sins, and that there are rewards and punishments in a future life. H.'s *Poems* were pub. in 1665, and reprinted in 1881; his historical work, *The Life and Reign of King Henry VIII*, appeared in 1649.

Herbert, George (1593-1633), clergyman and poet, younger brother of Lord H. of Cherbury (q.v.), b. Montgomery Castle in Wales. He was educ. at Westminster and Trinity College, Cambridge, where he was made a fellow in 1615. In 1618 he was prelector in the rhetoric school at Cambridge, becoming in 1619 public orator, and in that capacity drew the notice of King James by his Lat. verses eulogising the king's *Basilicon Doron*; and for a time he followed the court and made many distinguished friends. But the death of the king and of his patrons, the duke of Richmond and the marquess

of Hamilton, ended his chances of court preferment. He was, however, easily persuaded to adopt the religious life in 1626 by Ferrar, and was ordained priest in 1630 and received the living of Bemerton, Wilts. Here he wrote his religious poems, *The Temple and Sacred Poems and Private Ejaculations*, 1633, which were read by Charles I in prison, and much praised by Henry Vaughan, Crashaw, and Coleridge. H. gave the Anglican Church its finest expression in verse, and on that account is a treasured Eng. heritage. He has not always been given that representative position; the high regard in which he was held in the 17th cent. waned



GEORGE HERBERT

early in the 18th, and for a century or more his poetry was considered uncouth. Coleridge did much to restore it to favour and it has received sympathy and understanding from modern scholars. It is noted for its colloquial phraseology, pliable verse-forms, and quiet music. His chief prose work, *A Priest to the Temple*, was first printed in his *Remains*, 1633. H.'s poetry is sometimes said to show the influence of Donne, but whereas Donne, as a 'metaphysical poet,' tends to obscurity, the very simplicity of H. is the secret of his power; and where Donne's conceits are the pith of his thought, those of H. are mostly illustrations of a thought which really require none. Donne, too, was a rebel against Elizabethan literary fashions, H. was an adherent of them—as is shown by the fact that *The Temple* contains many euphuisms and diagrammatic conceits, besides a number of sonnets. His life was written by his friend Isaac Walton, 1670. See *The Works of George Herbert*, ed. by F. E. Hutchinson, 1941, who has restored the text of both the Eng. and Lat. poems to their original state. See also study by Margaret Bottrall, 1954.

Herbert, George Edward Stanhope Molyneux and Henry Howard Molyneux, see CARNARVON, EARLS OF.

Herbert, Mary, see PEMBROKE, COUNTESS OF.

Herbert, Sydney, 1st Baron Herbert of Lea (1810–61), statesman, b. Richmond, and educ. at Harrow and Oriel College, Oxford. In 1833 he entered Parliament as a Conservative and held sev. appointments under Peel, and in 1845 was transferred to the office of secretary for war, with a seat in the Cabinet. In 1852 he again held this position under Lord Aberdeen, and became colonial secretary in 1855. He was responsible for the War Office during the Crimean War, and took a leading part in the movement for army reform after the war. He was also interested in the hospitals at Scutari, and it was he who sent out Florence Nightingale (q.v.). In 1859 he was again secretary for war under Lord Palmerston, and in 1860 was made Baron Herbert.

Herbert, Sir Thomas (1606–82), traveller and author, b. York. In 1628 went to Persia with Sir Dodmore Cotton and Sir Robert Shirley. On the outbreak of the Civil war he adhered to the side of the Parliament, but was appointed to attend on the king in 1646. In 1660 he was made a baronet for his faithful services to Charles I. He pub. *Description of the Persian Monarchy*, 1634, reprinted as *Some Yeares Travels into divers parts of Asia and Afrique*, 1638, and *Threnodia Carolina* (reminiscences of the captivity of Charles I), reprinted as *Memoirs of the Last Two Years of the Reign*, 1702 and 1813.

Herbert, Victor (1859–1924), Irish-Amer. composer and conductor, b. Dublin, grandson of Samuel Lover. Sent to Germany as a child to study music, particularly cello-playing. Became first cellist of Johann Strauss's dance orchestra in Vienna, 1882. Conducted the Pittsburgh Symphony Orchestra, 1898–1904. From 1894 he wrote a large number of light operas, producing some 35, the best of which are *The Wizard of the Mill*, 1896, and *Babes in Toyland*, 1903.

Herberton, tn and shire of Queensland, Australia. The tn is situated 1125 m. by rail N. of Brisbane via Cairns. Industries: vineyards, poultry, agriculture, tin- and metal-mining, timber. Pop. tn 1220, shire 3470.

Herbs are plants with soft, succulent stems that wither away after flowering, leaving no woody or persistent growth above ground, but may also include plants of which the leaves, shoots, flowers, or seeds are used for food, flavouring, medicine, or perfume. Cultural requirements are simple, chiefly a sunny site and a well-drained, medium-rich soil. Garden H. are usually raised for culinary purposes. Angelica, anise, borage, caraway, chervil, coriander, dill, fennel, marjoram (sweet), parsley, purslane, savory (summer), sorrel, basil (sweet), sweet cicely, and rampion (qq.v.) are raised from spring-sown seed. Balm, chives, marjoram (pot), rosemary, horehound, hyssop, lavender, mint, rue, sage, savory (winter), southernwood, tansy, tarragon, and thyme (qq.v.) may be propagated by cuttings or root div.

Many H. have salad uses. H. for drying are harvested just as flowering begins, and dried quickly in shade, hung downwards in a current of air. Seeds are harvested when ripened. Pot-H. is a term usually applied to vegetables such as carrots, turnips, etc., cut up and mixed with flavouring H. for soups, etc. Medicinal H. such as foxglove and deadly nightshade, and scented H. such as lavender and southernwood, are grown commercially on herb farms. A careful choice of site and soil, skill in culture and harvesting, and good marketing are essentials of success. See W. Muenscher and M. Rice, *Garden Spices and Wild Pot Herbs*, 1955.

Herbs, Medicinal, see MEDICINAL.

Hercegovi (It. Castelnova), tn in Montenegro, Yugoslavia, near the entrance to the beautiful, fiord-like Gulf of Kotor. It has many medieval buildings, rich Mediterranean flora, and is a popular holiday resort. Some good wine is produced. The inhab. of H. and neighbouring tns and vills. are an ancient seafaring race. Pop. 13,300. See also KOTOR.

Hercegovina, S. part of the rep. of Bosnia-Hercegovina, Yugoslavia. It includes parts of the Dinaric Alps (q.v.). The lowlands, and the valley of the Neretva (q.v.), are fertile and have a warm, Mediterranean climate. The prin. tn is Mostar (q.v.). Area 3569 sq. m. See also BOSNIA-HERCEGOVINA.

Herculaneum, ancient residential tn of Italy, situated in Campania near the coast at the foot of the W. slope of Mt Vesuvius, a short distance from Naples. The visible ruins are not so well known as Pompeii, being much smaller in extent and less visited. The city was probably founded by the Oscans, and it appears to have belonged to the Etruscans, and became a Rom. tn in 89 BC, when it was captured during the Social war. According to Seneca, it suffered from a severe earthquake in AD 63, and Pliny the Younger describes how with Stabiae and Pompeii it was destroyed by the terrible eruption of Mt Vesuvius in 79. The city was then entirely buried under ashes, stones, and lava; few, if any, people could have escaped. Its very name was forgotten in the Middle Ages. In 1719 Prince Elbeuf discovered the ancient site by accident in a search for marble for the villa he was building at Portici; he learned from the peasants that there were pits quite close from which they obtained marble and had also extracted many statues. Excavations began on a small scale; the theatre, many houses, the forum, and the basilica were discovered, with statues and paintings. In the Villa Suburbana a number of bronze and marble busts and statues, and a library of valuable papyri, containing works by Epicurus and Philodemus, came to light. Among the famous statues are the reclining Hermes, the drunken Silenus, and a pair of wrestlers or runners; these were all in black bronze, and are now in the Naples Museum. H., as we know, not only from the works of art discovered, but also from contemporary sources, was

inhabited by a more cultured, refined, and intellectual class than the neighbouring tn of Pompeii (q.v.). Nearly the whole site of the city is occupied by the tn of Resina, and is therefore difficult to excavate; owing to financial trouble with the property owners, systematic excavation, begun 1908, was temporarily stopped, but further operations were undertaken in 1927-30. H. sustained no damage in the Second World War. See C. Waldstein and L. Shoobridge, *Herculaneum, Past, Present and Future*, 1908; A. W. Van Buren, *A Companion to the Study of Pompeii and Herculaneum*, 1933.

Herculano de Carvalho e Araújo, Alexandre (1810-77), Portuguese poet and historian, b. Lisbon. He was educ. for a commercial career, but had to leave Portugal in 1831, when the country was under the despotic ruler Dom Miguel. In 1836 he pub. *A Vos do Profeta*, and in 1838 *A Harpa do Crente*, in which he describes the bitterness of exile, proving himself to be a poet of feeling. In 1837 he founded the *Panorama*, in imitation of the Eng. *Penny Magazine*. This paper had a wide circulation, and H.'s articles were very popular with the middle class. In 1844 he started a new venture, and wrote historical novels in imitation of Sir Walter Scott, viz. *Eurico*, 1844, and *Monge de Cister*, 1848, but his greatest work was his *History of Portugal from the Beginning of the Monarchy to the end of the Reign of Alfonso III*, 1846-68. This book was regarded as a historical work of the first rank, and is still reckoned among the Portuguese classics. See life by V. Nomesio, 1934.

Hercules, Lat. for Gk Heracles, son of Zeus by Alcmena of Thebes in Boeotia. His step-father was Amphitryon, son of Alcaeus, son of Perseus; and Alcmena was a granddaughter of Perseus. So H. belonged to the family of Perseus. On the day of his birth Zeus boasted that he was about to have a son who should rule over the house of Perseus, whereupon Hera, having made him promise that the descendant of Perseus b. that day should be ruler, hastened to Argos, and caused the wife of Sthenelus (son of Perseus) to give birth to Eurystheus, but delayed the birth of H. by keeping away the Ilithyiae, and so robbed H. of his throne. All the myths agree that he was strong from his birth, and under the protection of Zeus and Athena he escaped the deadly snares set by Hera, e.g. strangling 2 serpents sent to destroy him in his cradle. He was taught music, wrestling, archery, etc., but accidentally killed Linus who taught him the lyre, and was sent by Amphitryon to tend his cattle. While thus employed, he demonstrated further his strength by killing a huge lion which haunted Mt Cithaeron, and ravaged his father's flocks and those of the king of Thebes. On his way back to Thebes he met the envoys of Erginus going to demand their ann. tribute of 100 oxen from the Thebans. Cutting off the noses and ears of the envoys, he sent them back to Erginus, who at once made war on Thebes; but H.

defeated and killed him, and was rewarded by the king of Thebes with the hand of his daughter Megara. Soon after he paid a visit to Delphi, and being told by the oracle to serve Eurystheus for 12 years, went to Tiryns and fulfilled all the labours laid upon him. He strangled the Nemean lion, fought the Lernean hydra, captured the Arcadian stage, hunted the Erymanthian boar, cleansed the stables of Augeas, destroyed the Stymphalian birds, captured the Cretan bull, captured and subdued the mares of the Thracian Diomedes, seized the girdle of the queen of the Amazons, captured the oxen of Geryon, stole the golden apples of the Hesperides (persuading Atlas (q.v.) to get them for him while he temporarily upheld the sky), and fetched Cerberus from the lower world. After performing these 12 labours, he returned to Thebes, and sought Iole, the daughter of Eurystus, in marriage; but in a fit of madness he slew his friend Iphitus (son of Eurystus) and was bidden by the oracle to serve 3 years for wages and give his earnings to Eurystus. So he entered the service of Omphale, queen of Lydia. After this he sailed against Troy and killed Laomedon, defeated the Meropes and killed Eurypyus, and helped the gods against the giants. He also proceeded against Pylos and Lacedaemon, and then went to Calydon, where he fought Achelous for Deianira and married her. Subsequently he settled at Tractus and marched against Eurystus, killed him and carried off Iole as prisoner. This made Deianira jealous, so she sent a shirt to her husband steeped in the blood of Nessus, the centaur, hoping to restore his affection for herself. But the blood had been poisoned by the arrow with which H. had shot Nessus, and when H. put on the garment the poison entered his body and caused him extreme agony. He tried to tear off the shirt, but it clung to him, and he was brought to Tractus dying. Deianira, in grief, hanged herself; and H., seeing no remedy for his pain, climbed on a funeral pyre on Mt Oeta, and ordered it to be set on fire. A cloud came from heaven and carried him to Olympus, where he became a god and married Hebe. See Sophocles's *Trachiniae*; G. Murray, *Euripides and his Age*, 1913.

Hercules, Pillars of (*Herculis Columnae*), name given to the twin rocks Calpe (in the N.) and Abyla (on the opposite coast), which guard the entrance to the Mediterranean at the E. extremity of the Straits of Gibraltar. According to Pliny and Strabo, Hercules tore asunder the rocks which had before entirely divided the Mediterranean Sea from the ocean. Another legend asserts that he forced the 2 rocks into temporary union to make a bridge for the safe conveyance of the herds of Geryon to Libya, and another that he narrowed the Strait so as to shut out the sea-monsters which had previously made their way in from the ocean and infested the Mediterranean.

Hercules-beetle, popular name of *Dynastes hercules*, a species of lamellicorn

Coleoptera, belonging to the family Scarabaeidae; they inhabit tropical America, and the male insect is remarkable for the possession of a pair of large unequal horns, resembling pincers. Some of the male beetles reach a size of 6 in.

Hercules' Club, or *Aralia spinosa*, species of Araliaceae, found in the West Indies. See ARALIA.

Hercynian, or **Armorican Orogeny** (after Harz Mts, Germany, and Armorica, France), the period of mt building which took place in Upper Palaeozoic times and during which a mt chain developed which ran from S. Ireland across central and S. Europe into Russia. H. mt chains formed at approximately the same time occur in E. U.S.A., in Morocco, and in Siberia. The economic importance of the H. O. at the present day is considerable, for these movements determined the shape of the prin. coalfields of the world, where the coal was laid down during the Carboniferous Period either during or after the main H. movements of the crust of the earth.

Hercynian Forest, name used in ancient times to signify the wooded mt region N. of the lower and middle Danube, and sometimes to include the whole region from the Black Forest to the Sudetes. Later, it became a general designation for the entire wooded, mt ranges of middle Germany, from the Rhine to the Carpathian Mts.

Herzog, Ferenc (1863-1954), Hungarian author, b. Versec. He is recognised as one of the masters of Hungarian literary style. His historical romance, *The Pagans*, 1901, dealing with the conversion of the unbelievers of the 11th cent., *Bizánc*, 1904, a play, and *The Gate of Life*, 1919, a study of Hungary in Renaissance times, are among his best works.

Herd, David (1732-1810), author, b. Marykirk, Kincardineshire. He spent most of his time in Edinburgh, and was president of the Cape Club, a literary association which had many distinguished members. He is praised by both Scott and Archibald Constable, who acknowledges numerous obligations to him, but his fame rests on his pub. of *Ancient and Modern Scottish Songs, Heroic Ballads, etc.*, collected from Memory, Tradition, and Ancient Authors (2 vols.), 1776.

Herdecke, Ger. tn in the Land of North Rhine-Westphalia (q.v.), in the Ruhr (q.v.) valley, 32 m. ENE. of Düsseldorf. Pop. 15,000.

Herder, Johann Gottfried von (1744-1803), Ger. critic and poet, b. Mohrungen in E. Prussia. He studied theology at the univ. of Königsberg, where he met Kant and Hamann. At an early age he began to write verses, and his first pub. works were occasional poems and reviews contributed to the *Königsbergische Zeitung*. In 1764 he became a teacher at the cathedral school at Riga, and a few years later assistant pastor, and in 1767 pub. *Fragmente über die neuere deutsche Literatur*, in which he maintains that the truest poetry is the poetry of the people, and ridicules

the ambition of Ger. writers to be classic. In 1769 he went to Strasburg, where he met Goethe, and in 1771 became court preacher at Bückerburg. During this period he was one of the leaders of the new 'Sturm und Drang' movement, and pub. a jour. with others including Goethe, to diffuse the new ideas. In 1776 he became court preacher at Weimar, and while in this city pub. *Stimmen der Völker in Liedern*, an admirable collection of folk-songs, 1778-9; a celebrated work on Heb. poetry, *Vom Geist der hebräischen Poesie*, 1782-3 (trans. 1833), and his masterpiece, *Ideen zur Philosophie der Geschichte der Menschheit*, 1784-81 (trans. 1880), which proves H. to be an evolutionist after the manner of Leibnitz. Other works of his are: *Kritische Wälder*, 1769, *Plastik*, 1778, and *Über den Ursprung der Sprache*, 1772, a work on language. His *Sämtliche Werke* have been ed. by B. Suphan (33 vols.), 1877-1913. See R. Haym, *Herder nach Leben und Werken*, 1877-85; J. W. Eason, *Herder in Germany*, 1945.

Herder, Ger. publishing house, founded 1801 by Bartholomä H. (1774-1839) at Meersburg, Lake Constance; since 1808 at Freiburg im Breisgau. Under the founder's son, Benjamin H. (1818-88), the firm played a leading part in the Ger. Catholic revival of the first half of the 19th cent., publishing many notable works of Catholic theology and encyclopaedias. National Socialist hostility to the Church prevented the planned extension of the Freiburg house, which was destroyed by bombs in 1944. After the Second World War, under Dr Theophil Herder-Dorneich, the firm had notable successes with theological works, encyclopaedias, and Catholic periodicals.

Heredia, José María de (1842-1905), Fr. poet, b. near Santiago de Cuba of a Sp. father and Fr. mother, migrated to France at an early age. He was educ. at Senlis and Havana, but finally went to the École des Chartes in Paris, and made France his home. He was a member of the new school known as Parnassiens, who regarded form as being of supreme importance, and his poems, *Les Trophées*, pub. in 1893, and composed almost entirely of exquisitely fashioned sonnets, prove him to have been a powerful word artist, as well as a master of the art of verse. If somewhat cold in their formal beauty, the craftsmanship of the *Trophées* is such as to rank H. among the foremost sonnet writers, not only of France, but of the world. In 1894 he was elected to the Academy and in 1901 became librarian of the Bibliothèque de l'Arménien at Paris. His other works are a trans. of Diaz del Castillo's *History of the Conquest of New Spain*, 1878-81, and a trans. of De Quincey's *Spanish Military Nun*, 1894. See A. Fontaines, *J. M. de Heredia*, 1905; U. V. Chatelain, *J. M. de Heredia*, 1930.

Heredia, tn and cap. of the prov. of H., central Costa Rica, 6 m. W. of San José. It is well situated (altitude 3786 ft.) and is the centre of an agric. and coffee-growing dist., on the main railroad

highway. Pop. (prov.) 51,760; (tn) 13,115.

Herediments, term in Eng. law, meaning property which, unless devised by will or disposed of by the owner in his lifetime, must descend to his heir (q.v.). H. are practically synonymous with land, and are divided into *corporeal*, i.e. interests in land in possession, or which confer the present right to enjoy the land either personally or through tenants, and *incorporeal*, i.e. rights subsisting in or over lands in the possession of another, such as reversionary and contingent interests (see REVERSION), or rights of way, or other easements. The term also includes heirlooms, and such furniture or chattels as by custom descend to the heir and not as personality.

See also INHERITANCE.

Heredity may be defined as the genetic relationship between parent and offspring. Though the study of H. as a science was known to the Greeks, and Hippocrates in the 5th cent. pub. a theory of H., no great progress was made until the end of the 19th cent. Its practical importance to human beings, both in their personal lives and in plant and animal breeding has led to considerable interest in H., and to the collection of a large number of observations requiring careful examination and confirmation before they can be adduced as scientific evidence in support of any theory of H. Such familiar expressions as 'Like begets like' and 'A chip of the old block' show that the inheritance of similar characteristics has long been widely recognised. A fact less commonly known, however, is that of the inheritance of differences. Ability to differ depends on some peculiarity in the constitution of the offspring, and this it has received from its parents. H. thus includes the possibility of variation, and consequently of evolution. Before attempting to discuss theories of H. it is necessary to review briefly the mechanism resulting in the production of a new organism. Amongst higher animals and plants sexual reproduction is almost universal, and this consists in the union of 2 cells or gametes (Gk *gametês*, spouse), that of the female being the egg cell or ovum, and of the male animal the spermatozoon. In flowering plants the male gamete is usually a nucleus, with a little accompanying cytoplasm, formed in the pollen grain and conveyed by the pollen tube to the egg cell. Free swimming male gametes of plants occur for instance in ferns and in mosses and are termed spermatozooids. Both gametes are microscopic, and the male is usually very much smaller than the ovum, consisting mainly of nucleus with an almost negligible amount of cytoplasm. The female gamete has a nucleus, and in most cases a relatively large quantity of cytoplasm in which food may be stored. Owing to the deposition of food around or to one side of the ovum, the eggs of oviparous animals are of appreciable size. Fertilisation consists in the union of the male and female gametes; the fertilised egg-cell is the beginning of

the next generation, and contains all the potentialities of the new individual. Unless fertilisation has taken place, the ovum is usually unable to develop into the adult organism.

Theories of Heredity.—Lamarck (1809) formulated some laws of inheritance and stressed the importance of the transmission of useful characteristics. He claimed that useful variations were more likely to be inherited than useless ones, and, according to his theory, useful characteristics acquired during the lifetime of an organism could be transmitted to offspring. The possibility of the inheritance of such 'acquired' characteristics will be discussed later. Darwin accepted Lamarck's theory, and suggested that inheritance was effected by pangenesis—that is, by the accumulation in the germ cells of pangons, small particles of each of the different types of body cells. Thus body cells modified by the environment could send particles to the germ cells and the modification would be transmitted. The germ cells of human beings would, on this hypothesis, contain particles from kidneys, liver and every digestive organ, hair, eyes, bones, lungs, various muscles, and every different kind of body cell, so that the number of particles to be included rendered the theory highly improbable, while the unerring passage of these particles to the germ cells presents further difficulty. Weismann seems to have been the first biologist to consider experimental evidence essential to the foundation of a theory of H., and, in 1888, as a result of his observations on the embryology of some of the higher animals, strongly denied the inheritance of acquired characteristics. In the animals he investigated he discovered that the germ cells, i.e. the cells eventually giving rise to gametes, were absolutely distinct from the body cells and were continuous from generation to generation. In the lower animals, the Protozoa and Coelenterata, and in many plants, Weismann believed that a small amount of germ plasma accompanied at least some of the body cells. In this way he accounted for asexual reproduction and for the inheritance of a somatic modification by, for example, a plant propagated by a cutting from the modified part. Except in so far as all cells are ultimately derived from the div. of a single cell and so retain indirect continuity, there is little evidence that the germ cells of most plants or of many animals are directly continuous from generation to generation. Moreover, recent research has shown that body cells not too highly differentiated may become dedifferentiated and function as germ cells, so that there is no absolute distinction between body- and germ-plasm. Weismann made a greater contribution to the study of H. by his theory that the nuclear chromatin was composed of minute particles, the determinants, each of which was responsible for the production of a characteristic of the individual. The nucleus (q.v.) is now generally recognised as playing a very important role in H.,

and the theory of the nucleus as the physical mechanism of transmission of hereditary characteristics is based on a large number of observations of H. in plants and animals. A few of the main arguments in support of the theory are given here. (1) The nucleus of any given species of plant or animal consists of a constant number of chromosomes (see CELL). Although these appear in nuclear div. and afterwards apparently lose their identity when the nuclei are reconstituted, as soon as div. is about to occur again, the same number of chromosomes is formed. Very occasionally the number may be changed by the loss or addition of a chromosome owing to irregularities in div., but such a change is accompanied by a change in the characteristics of the organism. Moreover, many of these chromosomes have a distinctive form: O, X, J, and V shaped chromosomes are common, and reappear consistently in subsequent divs. There is therefore reason to believe that the chromosomes retain their identity throughout the natural nuclear phases. (2) The number of chromosomes, though large in some species of plants and animals, is always less than the number of characteristics possessed by an organism. Consequently, if the nucleus be the mechanism for the transmission, each chromosome must bear the determinants of sev. characteristics, and all those present in any single chromosome will be transmitted as a group. This is borne out by evidence gained by experiment, and the characteristics forming such a group are described as *linked*. In the vinegar fly *Drosophila*, for instance, it has been shown that the hereditary characters are linked in 4 groups, corresponding to the 4 pairs of chromosomes. (3) Subsequent to the formation of gametes, a 'reducing' nuclear div. takes place, so that the gametes contain in their nuclei only half the number of chromosomes (see CELL). When the gametes fuse, the number is restored to its full complement, the diploid number. The significance in H. of this reducing div. is threefold. First, by means of it the number of chromosomes, and inferentially of characteristics, is kept constant instead of doubling during every fertilisation; secondly, it provides a mechanism for the assortment of groups of characteristics, and thirdly, for the segregation, demonstrated experimentally by Mendel, of alternative characteristics (see MENDEL). This segregation will be discussed in the following section on types of inheritance. For the explanation of the assortment, we must consider the reducing div. When this is about to occur, the chromosomes arrange themselves in pairs and one member of each pair passes into the daughter nuclei. If we consider only 2 pairs (Figs. 1A, 1B) Aa and Bb, A passes into one daughter nucleus, a to the other; A may pass into the same nucleus as B or as b and in this way may arise differences between gametes of the same parent. When sev. chromosomes are present, it is clear that a very great number of different

combinations may occur aided by 'crossing over' between parts of allelomorphous chromosomes, as represented in Fig. 1B. The chromosomes of a pair are alternative or allelomorphous. There is considerable experimental evidence to form a basis for the view that the allelomorphs are derived one from each parent and bear determinants of the same characteristic. For instance, if a chromosome bears the determinant for eye colour, its allelomorph will also bear a determinant for eye colour, but not necessarily for the same one. This will be demonstrated in the discussion of experimental work. Although for these and other reasons the nucleus provides an admirable mechanism for the transmission of hereditary characteristics, it cannot in

from the X and Y, or sex chromosomes. Sev. other animals have been found to possess sex chromosomes, though the numbers of these vary, and the male may have more or fewer than the female or may have the same number. Most investigators believe man to have 1 sex chromosome and woman 2. The females of some species of insects have 2 equal sex chromosomes and the male 2 unequal ones, and in other species the reverse is the case. It has, however, recently been shown that an insect may have the chromosome constitution of a female or of a male and yet be an intersex or even of the reverse sex. In other animals hormones (q.v.) are assumed to effect complete or partial sex reversal; or again, the sex chromosomes of

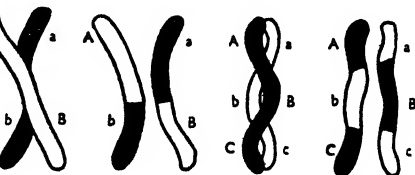


FIG. 1B. DIAGRAMMATIC REPRESENTATION OF THE WAYS IN WHICH CROSSING OVER MAY BE EFFECTED DURING SEGREGATION OF ALLELOMORPHIC CHROMOSOMES.

FIG. 1A (left). SEPARATION OF THE ALLELOMORPHIC CHROMOSOMES AB, BC, CC, DD, OF THE BROAD BEAN (*Vicia faba*).

Semi-diagrammatic

all cases be regarded as the sole mechanism. Since inheritance from both parents is approximately equal and the male gamete has usually much less cytoplasm than the egg cell, it was first considered that the cytoplasm could play no part in the determination of characteristics. Experiments in which development of an enucleated egg cell has been initiated by the entry of a sperm have, however, resulted in the production of larvae resembling the mother, and consequently the influence of the cytoplasm cannot be disregarded. It has been suggested that before or during the enucleation some emanations from nucleus into cytoplasm took place, but this has not been proved. Objections to the nuclear theory also occur in connection with the inheritance of sex. Morgan and Bridges were led by breeding experiments with *Drosophila* to expect a difference in the chromosomes of the male and female, and examination of the nuclei showed 2 similar chromosomes, subsequently termed X-chromosomes, in the female. In the male the allelomorph of the X-chromosomes was a chromosome of different form, the Y-chromosome. The other pairs of chromosomes of both sexes were similar, and distinguished as 'autosomes'

different parents have been shown to have different values, so that in some combinations a chromosome that should determine maleness, for example, is feebler than its allelomorph, an intersex or female resulting according to the difference in influence exerted by the 2 chromosomes. Thus the presence of the sex chromosomes is insufficient in itself to determine the sex of the animal. On account of the effect of the cytoplasm and of hormones, the nucleus cannot be regarded as the sole agent effecting the transmission of hereditary characteristics, but it undoubtedly plays a great part in H. Morgan introduced the conception of the *gene* as the physical determinant of a characteristic. He considers that paired elements, the genes, linked together in a number of groups, determine the characteristics of an organism. A single characteristic may be due to the interaction of a number of genes which are to be regarded as biological elements. Morgan's theory is based on 2 types of experimental work, the genetic results obtained by breeding many generations of *Drosophila* under carefully controlled conditions, and the cytological examination of cells of these insects.

Types of Inheritance.—Since the current theories of H. are based on the results of experimental work, it is necessary to mention briefly the nature of this work. Johann Gregor Mendel, of Brunn, seems to have been the first investigator to consider quantitative experiments necessary in the study of H., and in 1866 pub. the results of his experiments in hybridisation (see MENDEL). He selected well-marked, easily recognisable differentiating characteristics of the field pea for observation, and collected results separately for each pair of characteristics chosen. For example, Mendel crossed flowers of plants producing green seeds with those of yellow-seeded plants. All the offspring, con-

Thus if G, Y (Fig. 2) be the determinants of green and yellow colour respectively, a pure green-seeded plant would have allelomorphs G, G; a pure yellow-seeded, Y, Y, and a hybrid plant G, Y. The gametes would contain either G. or Y, but not both. If the parents selected for the hybridisation experiments were pure green and pure yellow, the table in Fig. 2 would represent the results.

Thus the probability of the production of a pure yellow or of a pure green-seeded parent is 1 in 4. The yellow colour is said to be dominant and the green recessive. In all cases studied by Mendel recessive and dominant characteristics appeared, and the ratio for any pair

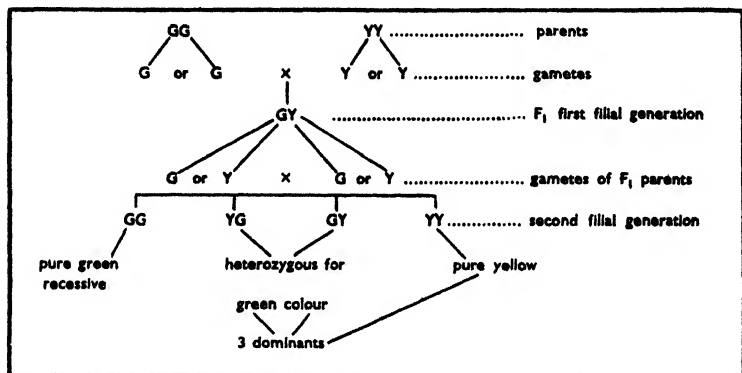


FIG. 2. DIAGRAM SHOWING RESULTS OF MENDEL'S EXPERIMENTS IN HYBRIDISATION WITH PURE GREEN- AND YELLOW-SEEDED PLANTS OF THE COMMON FIELD PEA

stituting the first filial or F₁ generation, produced yellow seeds. When such plants were intercrossed, some of their offspring produced yellow, others green seeds in the ratio 3 yellow to 1 green. When the green-seeded plants were crossed between themselves, they always produced green-seeded plants, i.e. they bred true. The yellow-seeded plants were of 2 kinds. One-third of them produced in successive generations only yellow seeds: the remainder produced plants of both kinds. The plants breeding true were described as pure or homozygous for seed colour; the others were impure or heterozygous, and contained the determinants of both colours. From these and similar results for other characteristics, Mendel concluded that segregation of the determinants took place, so that a gamete contained the determinant on only one of a pair of alternative characteristics, i.e. one allelomorph only could be present. This is often called Mendel's law of the purity of the gametes. After fertilisation, the 2 allelomorphs, 1 from each gamete, came together and were segregated again before the new gametes were formed.

of characteristics was always 1 pure dominant: 2 heterozygous dominants: 1 recessive. This type of H. is consequently described as Mendelian, and was independently discovered by Bateson, Correns, and de Vries 34 years after the pub. of Mendel's results. Subsequent experiments have shown that complete dominance is not an essential of Mendelian inheritance. The offspring of black Andalusian birds crossed with splashed white ones are blue, and these blue Andalusians, intercrossed, produce black, blue, and splashed white birds respectively in the Mendelian ratio 1:2:1. Thus the 2 allelomorphs, the genes for black and white, interact, producing an intermediate characteristic, 'blue.' The assumption that complete dominance was essential led to the explanation of Mendelian inheritance by the 'Presence and Absence' hypothesis. According to this, dominance is due to the presence of the genes determining a characteristic, whereas the recessive condition is due to their absence. In the experiment with Andalusian fowls, however, the colour of the hybrids can be explained only on the

assumption that the presence of a determinant of the recessive characteristic has modified that of the dominant one. Several other experiments support this assumption, and the 'Presence and Absence' hypothesis has been almost completely abandoned, being retained in only very few cases where it provides the simplest explanation of results. In any species

half the sons and half the daughters will be colour-blind, but if the father has normal colour vision, half the sons will be colour-blind and half the daughters will carry the gene for colour-blindness. This and similar phenomena of sex-linkage may be explained by supposing that the sex chromosomes carry other genes in addition to those determining the sex of

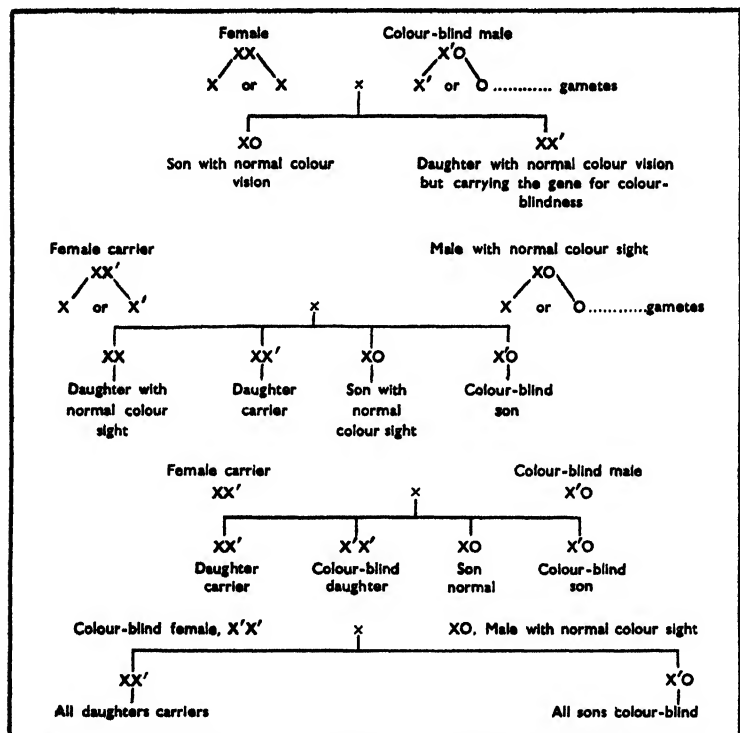


FIG. 3. DIAGRAM SHOWING INHERITANCE OF SEX-LINKED CHARACTERISTICS

which is sexually reproduced, males and females seem to be produced in approximately equal numbers, so that the sex ratio, i.e. the ratio of males to females, is 1:1. The transmission of certain characteristics is associated with the sex of the parent, and these are termed sex-linked characteristics. The best-known examples of these in man are colour-blindness and haemophilia. The sons of a colour-blind woman and a man with normal colour vision are all colour-blind; the daughters all have normal colour vision, but carry the gene for colour-blindness as a recessive. If one of these daughters marries a colour-blind man,

the organism. If XX (Fig. 3) represent the 2 sex chromosomes of woman, each egg cell will contain a single X ; and if X be the one sex chromosome of man, each spermatozoon will contain either X or O . If X' represent the sex chromosome carrying the gene for colour-blindness, the table will show at a glance the mode of inheritance.

From this it is obvious that sex-linked characteristics are not inherited in the Mendelian ratio. Similarly the ratio cannot hold for groups of characteristics determined by any other single chromosome. In any case, however, it must be remembered that the ratios given by

theory may be disturbed or never be realised, for all the egg cells and sperms do not unite at the same time, so that, for instance, those spermatozoa with the X-chromosome might never succeed in fertilising an egg cell, and all the children would then be sons. However, when large numbers of individuals are considered, the results work out according to the law of probability, and then the Mendelian ratio, the sex ratio, and other ratios deduced theoretically from a knowledge of the genetic constitution, are realised. Mendel himself investigated over 1000 plants, and other investigators have since worked with tens of thousands. Another phenomenon disturbing the theoretical ratio is that of 'crossing over.' This is a phenomenon in which the linkage of genes is broken and an exchange takes place between allelomorph groups of genes. The diagrams show how this may be effected during the separation of allelomorph chromosomes very closely associated before segregation takes place.

Variation.—Variation must be mentioned here, for evolution is dependent on the inheritance of variations. In a discussion of variation and H. the following questions arise for consideration. What is inherited? Are variations themselves transmissible, or is the power to vary inherent and the actual variation due to environment? For an account of modes of variation, see VARIATION. Darwin believed continuous variations were inherited and eventually gave rise to new species. This theory, however, awaits biometrical proof, for the process is so slow that it is practically impossible to obtain experimental proof. Discontinuous variations occur in nature, and undoubtedly give rise to new species, but their cause is unknown. The transmission of mutations places the doctrine of common descent on a much firmer foundation than it could otherwise hold. The inheritance of modifications due to the environment is still a disputed question, but what indisputably is transmitted is the power to vary, and it seems probable that organisms possessing this in a high degree will readily react to their environment and begin to vary early in life.

Statistical study.—Not only is H. studied by the experimental method, but important branches of the subject also need special statistical treatment. Galton founded this biometrical study, and Pearson and Weldon have been its leading exponents. There are only 3 possibilities with regard to any particular characteristic, viz. 2 pure types and the hybrid, though attempts have been made from time to time, with but little success, to classify kinds of inheritance. Notwithstanding this, it is possible to determine average degrees of resemblance between parent and offspring. The usual elementary example of this is the relation between statures of sons and fathers, and in this a smoothed graph is drawn, which shows the mean statures of sons from fathers of varying but classified heights: e.g. Pearson and Lee after an investigation

of some thousands of individuals discovered that the average height of sons from a group of 62-in. fathers was 65½-in.; from 65-in. fathers the sons' average was 67 in.; 68-in. fathers, 69-in. sons; 71-in. fathers, 70½-in. sons. Intermediate values were also determined. Now if the sons' statures be plotted on squared paper as vertical heights, and the corresponding father's statures be plotted as horizontal distances (see simplified diagram, Fig. 4), it is possible to draw a graph indicating the degree of inheritance which exists between father and son relative to stature. If the resulting graph had been a horizontal line as CD, it would have shown that

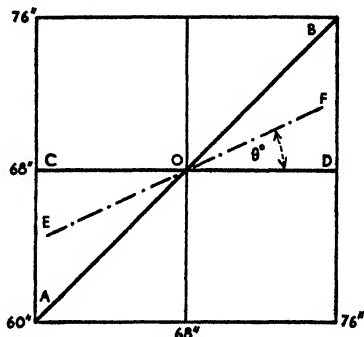


FIG. 4. DIAGRAM SHOWING DEGREE OF RESEMBLANCE BETWEEN STATURES OF FATHERS AND SONS

Vertical, son's stature; horizontal, father's stature

$\tan \theta$ = coefficient of correlation

all classes of fathers had about the same average-height son, i.e. the inheritance would have been zero. If the graph were inclined at 45° to the horizontal, as in the case of AB, it would show that each class of father would tend to have sons of the same average size as themselves, i.e. the inheritance would have been complete or unity. In the example chosen, the graph lies between the horizontal and the 45° line as, say, EF, and the steepness of this line is a measure of correlation existing between the 2 statures. The actual coefficient of correlation is expressed as the tangent of the angle FOD, and in this particular example is about 0.51. This simple graphical method is not of absolutely general application, as it assumes that variation is normal and similar in parents and offspring, and it also assumes that the graph EOF is linear; any marked bend in it would demand complicated methods of treatment. Pearson has determined a large number of such coefficients between father and son, e.g. stature 0.51, span 0.46, forearm 0.42

eye colour 0.50; and has suggested 0.48 as a mean value, i.e. on the average the offspring deviate from the mean about half as much as the parent does. If the second parent be also considered, the co-efficient increases, though it does not equal unity. It should be remembered that statistical methods are supplementary to experimental methods, and that they apply only to populations in the mass. The co-efficient of H. does not enable the investigator to determine what will occur in any particular case, as, for example, the son of a 6-ft father may be anything within the whole range of statures, yet in those cases of H., too complex for Mendelian analysis, the statistical method has proved of great value. The 'Law of Ancestral Heredity,' formulated as a result of statistical methods, is of considerable interest. Galton calculated that, on the average, half of the H. of an individual may be taken as derived from the 2 parents, 1 quarter from the 4 grandparents, and so on in the series 0.50, 0.25, 0.125, etc. Pearson has more recently given 0.6244, 0.1988, 0.0630 as the series, thus laying more stress on the parental bequest and less on the ancestral. Harris has found that there is a correlation between stature and length of leg, but no constant relation between stature and arm length, and other recent work includes the biometrical study of the inheritance of feeble-mindedness by Goddard.

Disputed Questions.—One of the most vexed questions in H. is that of the transmission of the acquired characteristics, and some of the differences of opinion with regard to this are due to looseness of definition. According to Lamarck's theory, a modification produced during the lifetime of an organism as a result of the influence of the environment was transmitted to offspring. An acquired characteristic may therefore be defined as one—not previously known to have appeared spontaneously in the ancestry of the individual—appearing as the result of the action of the environment and persisting after the removal of the factors inducing it. Since a recessive characteristic cannot appear unless both parents bear the gene for it, sev. generations may pass before the characteristic is revealed. Other characteristics may remain latent for many generations in an unfavourable environment, but neither recessive nor latent characteristics, when they eventually appear, are acquired, although both might easily be regarded as new if the genetic constitution of the organism be incompletely known. Both recessive and latent characteristics are inherent in the germ cells. If the offspring be subjected to the environment inducing the change in the parent, they might equally well acquire the same modification, and some of the results adduced—undoubted inheritance of acquired characteristics may quite well be due to direct influence of environment on the offspring. Numerous experiments have been carried out in an endeavour to discover whether acquired characteristics are transmitted,

but in most cases the pedigree of the animal experimented upon has been insufficiently known. Other experiments have not been carried out under really critical conditions and others have not been extended through a large enough number of generations to justify the conclusions drawn from them. The earlier experiments were concerned mostly with mutilations. Weismann and other investigators who cut off the tails of many generations of mice found the tails of the progeny unaffected by the experiment. Some of the most extensive experiments on mutilations were carried out on guinea-pigs by Brown-Sequard and his assistants, but the experiments do not warrant a definite conclusion, for they involved injury to the nerves of a parent. Many of the offspring were abnormal, but extremely few were affected in the same way as the parent, so that it seems that a new characteristic appeared, instead of the acquired one being transmitted. Moreover, in many of the experiments there was insufficient evidence to show that the abnormalities were inherent; in all cases the genetic hist. was not known for a sufficiently large number of generations. A well-controlled scientific series of experiments was carried out by Heslop Harrison and Garrett, on 3 species of moths. By feeding these on food impregnated with lead nitrate or with manganese sulphate, sooner or later a few black moths appeared. No black moths of these species had previously been recorded as occurring naturally. In breeding, the Mendelian ratio was obtained, the black pigment behaving as a recessive in 2 species, and as a dominant in the third, as far as the experiments went, but the third set was incomplete. Since the black colour did not appear in the parent, this cannot be considered as an example of inheritance of acquired characteristics in the Lamarckian sense of the term. A germinal change, however, must have been effected and transmitted, and some modern biologists would regard this as an example of transmission of acquired characteristics. This experiment affords striking evidence against Weismann's theory that the germ-plasm could not be affected by the body-plasm. Kammerer's experiments on the colour change of salamanders in a changed environment and on the breeding of the midwife toad, *Alytes*, in wet and dry habitats, led him to believe that acquired characteristics were transmitted, but the experiments require confirmation. Sumner's work on the effect of temp. on mice suggests positive results; Castle's experiments on guinea-pigs give direct negative results. Consequently at the present time experimental work has not yet yielded conclusive evidence in favour of the inheritance of acquired characteristics as such, but Heslop Harrison and Garrett's results show that environment may, through the body-plasm, act on the germ-plasm, and that germinal modifications so acquired are transmissible. The situation has been complicated recently

by evidence for *plasmogenes*—unit characters which are inherited, but whose material basis appears to be in the cytoplasm, rather than the nucleus. Likewise, many phenomena, such as the potential to become dormant, which had seemed on statistical evidence to be Mendelian, are now thought to be effected, probably by hormones, directly through the female parent. On the other hand, it is difficult to account for evolution if acquired characteristics are not inherited. The indirect evidence of paleontology is considerable, and seems to indicate that such inheritance must have occurred. Another disputed question, already discussed under theories of H., is that of the role of the nucleus as a mechanism for the transmission of characteristics, and of other agencies such as the cytoplasm and hormones, aiding or modifying inheritance. Sex inheritance also has caused much controversy, partly on account of the apparently conflicting results of different experiments, and partly because of its connection with sex determination. If sex chromosomes be the sole determinants, then the sex of the organism is determined at fertilisation, and cannot be changed. If the action of hormones, the 'sex hormones,' be able to reverse sex, it is conceivable that, whatever the nuclear constitution may be, with increased knowledge sex may in the future be determined at the will of the parents. Some scientists think that sex determination may depend on the nutrition of the parents, but there is no conclusive evidence to support this theory. Teleonomy and maternal impression (*see BREEDING*) are not accepted by most scientists, but tradition dies hard amongst cattle-breeders, and so belief in these theories is still fairly widespread.

Practical breeding.—One of the most valuable applications of Mendelism is the fixing of pure types. A thorough and systematic search for the best pure lines is one of the best methods of improving those economic plants which are self-fertilised, and Nilsson and his assistants have done valuable work in Sweden in isolating the best pure varieties from the mixtures of numerous types existing in that country. In the case of the maize experiments by Shull and East, a definite increase in vigour has followed systematic crossing. Prof. Biffen has produced wheat which combines the valuable features of one race with the immunity to 'rust' of another otherwise less valuable type. Careful selection in sugar-beet has resulted in an increase of sugar percentage from 8 to 17. More difficulty is experienced with regard to animal breeding, and theory at present does little else than give reasons for principles already discovered, such as careful selection and the 'balancing of defects.' 'Inbreeding' to fix type has been a long-established practice and 'outbreeding' to secure vigour is its well-known companion rule. The matter becomes still more difficult when the principles have to be applied to mankind. The small numbers of progeny of mam-

mals, the time taken for their development, and the large number of characteristics to be considered, make the study of animal breeding, and particularly of eugenics, a very slow process. *Eugenics*, described elsewhere, is the science which deals with the improvement of the inherent qualities of the human race, and although its principles are based on H. and are thoroughly sound, yet legislative schemes of positive eugenics are very difficult to introduce, but a beginning has been made in the U.S.A. and under the Nazi regime in Germany, for instance by the compulsory sterilisation of individuals suffering from incurable forms of insanity. As mentioned earlier, conclusions certainly appear to indicate that man is almost entirely the product of inborn factors which are not directly affected by environment, and many responsible students of H. maintain that the improvement of conditions is resulting in the propagation of the degenerate, and the race as a whole is suffering in consequence. Natural selection as such is out of the question, but some restriction on the reproduction of the unfit is undoubtedly demanded by H.

Cyto-genetics.—One of the most encouraging recent lines of work has been the correlation of cytology (i.e. microscopic observations of the cell (q.v.) and especially of the chromosomes) with breeding experiments, whereby a new branch of biology, cyto-genetics, has originated, and mutual support has been afforded to what seemed at first to be disconnected studies. The facts of sex-linked inheritance, for instance, have been linked up with observations on the sex chromosomes. *See* R. C. Punnett, *Mendelism*, 1905, 7th ed. 1927; R. R. Gates, *Heredity and Eugenics*, 1923, and *Human Ancestry*, 1947; W. E. Castle, *Genetics and Eugenics*, 1930; E. B. Ford, *Mendelism and Evolution*, 1931; J. B. S. Haldane, *Heredity and Politics*, 1938. *See also* BIOLOGY; GENETICS; EUGENICS.

Hereford, Earl and Viscount of. Before the Norman conquest of England the earldom was held first by Sweyn, eldest son of Godwin, being afterwards (1051) conferred by Edward the Confessor upon his own nephew Ralph the Timid (d. 1057). Wm I granted it to Wm Fitzosbern, who commanded the right wing of his army at Hastings; it was forfeited by Fitzosbern's son and heir, Roger, in 1075. The earldom was next held by Miles of Gloucester (d. 1143), upon it was conferred in 1141. His daughter and co-heiress, Margaret, married the constable Humphrey de Bohun, whose grandson, Henry de Bohun, was created earl of H. in 1199. In 1380 May, one of the co-heiresses of Humphrey de Bohun, earl of H., Essex, and Northampton, married Henry Plantagenet 'of Bolingbroke,' who was created earl (1384) and duke (1397) of H. Upon his accession as Henry IV the earldom was merged in the Crown.

The first viscount was Walter Devereux (d. 1558), who received the title in 1550 for his services in the Fr. wars. The

second was Walter, earl of Essex, father of Elizabeth I's favourite. The present holder of the title is the 18th viscount (b. 1932), grandson of the 17th viscount whom he succeeded in 1952. Viscount H. is the premier viscount of England.

Hereford, municipal bor., city and co. tn of Herefordshire, England, on the R. Wye, 144 m. WNW. of London by railway. Its site was seized by the Mercians in about AD 600 and used as an outpost against the Welsh, and later Offa made the Wye the Welsh boundary at H. On

late in the 11th cent., the nave and other Norman parts of the building being completed in about 1140. The beautiful early Eng. Lady Chapel was built in about 1220 and other portions were not completed until the early 15th cent. In 1786 the Norman W. tower collapsed, bringing down with it 2 bays of the nave, and its rebuilding was entrusted to Wyatt. He built a W. front so unsuitable that it had later to be replaced, shortened the nave by 1 bay and rebuilt its clerestory and vaulting in Gothic style, thereby destroying the



W. F. Mansell

HEREFORD CATHEDRAL FROM THE NORTH-EAST, SHOWING THE EARLY ENGLISH LADY CHAPEL

account of its position, H. was an important place in the Middle Ages when it became a prosperous centre of the woollen trade. Early charters describe H. as being in Wales. The city's first charter was received from Richard I in 1189, but long before that it had a well-defined system of local gov. Edward the Confessor made his nephew, Ralph, earl of H., and this Norman earl built its first castle which, however, together with the cathedral, was destroyed in 1055 following a defeat by the Welsh. From that time until the city's capture by the famous Col. Birch in 1645, H. was the scene of constant warfare, the castle finally being demolished in 1660. The castle green was laid out by Bishop Beauchamp, grandson of Charles II and Nell Gwynne, on the site of the castle.

The cathedral, founded not later than 650 by its first bishop, Putta, and destroyed in 1055 by the Welsh, was rebuilt

beauty of its original completely Norman character. The restoration in 1863 was from the designs of Sir Gilbert Scott. The 2 most treasured possessions of the cathedral are its Chained Library and the Mappa Mundi. The latter is dated about 1300, and, since the disappearance of the Nuremberg map, is probably the earliest map of its kind in existence. Jerusalem is seen to be at the centre of the world. Only 2 other chained libraries can compare with the one at H., which contains amongst its 1440 books, some very rare manuscripts and early printed vols. Caxton's *Golden Legend*, *The Nuremberg Chronicle*, and the only surviving copy of the *Use of Hereford* are a few examples. Other buildings are the Coningsby Hospital (1614), the Cathedral School (1384), St. Ethelbert's Hospital, the churches of All Saints and St Peter's, the college of the Vicars choral, and the Episcopal Palace. In the tn hall are the charters

and city plate. The Old House is an attractive black-and-white timbered house designed and erected by John Abel.

The 'Three Choirs Festival' and 'Three Counties Show' are held in H. every third year. The city is also interesting as the bp. of David Garrick, and, it is claimed, of Nell Gwynne, and for its associations with Sarah Siddons and Fanny Kemble. The fine bridge over the Wye was built at the close of the 15th cent. and from it there is a well-known view of the cathedral. Chief manufs. are tiles and cider-making, fruit preserving, and engineering. An airport was opened in 1947 on the H. Race Course. Pop. 32,490.

Hereford Breed, see CATTLE.

Herefordshire, inland co. of the W. Midlands of England, on the SE. border of Wales, bounded on the N. by Shropshire, and on the S. by Gloucestershire and Monmouth. Hereford (q.v.) is the co. tn; its cathedral dates from Norman times. Old Red Sandstone underlies most of H., and the rich red soil which it produces is responsible for the co.'s agric. prosperity. There are no minerals of economic importance. The surface is undulating, and H. is watered by the Wye, celebrated for its salmon fishing, and by its tribs. There are extensive orchards and hopfields, and ample grazing for the famous Hereford cattle, red in colour with white faces. Sheep, especially Ryelands, are also grazed. Prin. industries are cider-making, and the preserving and canning of fruit. The co. returns 2 members to Parliament. Area 843 sq. m.; pop. 127,092. See *English County: a planning survey of Herefordshire*, 1946.

Herefordshire Light Infantry. Until 1947 the title of the regiment was 'The Herefordshire Regiment,' but this was changed when it became part of the Light Infantry Group. It is a T.A. unit, descending from a volunteer rifle corps formed in 1860. A contingent from the regiment served in the South African War and the regiment was represented by battalions in both the world wars. The 36th Foot, which was linked with the 21st to form the present Worcestershire Regiment (q.v.) in 1881, for long bore Herefordshire Regiment as part of its title.

Herent, tn in the prov. of Brabant, Belgium, 14 m. ENE. of Brussels. It manufs. starch, oil, tile-stones, and bristles. Pop. 9000.

Herentals, tn in Belgium, 19 m. ESE. of Antwerp. The tn hall with belfry dates from the 15th cent. Chief manufs. are woollen goods, footwear, tobacco, and there are diamond-cutting, breweries, tanneries, brick-works, rope-walks, and an iron-foundry. Pop. 16,500.

Herero. The H.s form a branch of the Bantu tribes of the Ovambos. They lived originally in the land of 'Raruu'—in the reed country—though where this country was situated has never been determined. Two chieftainships migrated from there and dwelt with the Bechuanas. The H.s owned great herds of cattle. One of the

H. chiefs came into conflict with the Bechuanas, as the grazing lands of the latter extended far into what was once known as Hereroland, and a deciding battle took place at Etimba, N. of Okahandja. The H.s were beaten and saved their cattle by trekking into the Kaokoveld where they remained unmolested for some 2 centuries (1550 to 1750). The Kaokoveld then stretched from the Kunene R. in the N. to the Omaruru R. in the S. The second H. tribe remained with the Bechuanas and lived in the NE. part of the present SW. Africa (q.v.), where their descendants live to this day and are known as Ovambos—people from the reed lands. They are not fully recognised as true H.s by their Kaokoveld tribesmen and are of more gentle character. The mountainous N. Kaokoveld, with its dry grazing lands and pastureless fountains, did not serve the requirements of the H.s with their ever-growing riches in cattle, and they trekked into the southerly veld, and Otjitambi became their religious and controlling centre. In 1750 some H.s from the Kaokoveld trekked S. over the Omaruru, drove away the Saan and Berg Damaras, were once more united with their brother tribe, the Ovambos, and eventually occupied all the country N. of the Swakop R. and eastwards to beyond Gobabis. Not all the H.s left the Kaokoveld, the Ovahimba-Hereros remaining in the N., as their grazing and watering places sufficed for their needs. They are poor classes, but by tradition, religion, and language they are pure H.s and it is only the Ovambos and H.s who trekked S. who call them Ovattimba, which means 'antbear.' The H. tribe were almost exterminated by the Germans in 1903-4 in circumstances of deliberate and callous barbarism. Ger. misrule, oppression, and cruelty goaded the Hottentots into rebellion in 1903 and shortly afterwards the H.s rose too. The Berg Damaras, through their association with the H.s, suffered equally in the slaughter which followed. The natives were no match for the trained Germans with their modern weapons and by the close of 1904 it was evident that both the Namas and the H.s were broken races.

Scattered bands, however, held out and the Germans then sent thousands of troops into the ter. In the guerilla warfare which followed the first big engagements violence begat violence and the Ger. forces were spurred to fresh vengeance by tales of mutilations of Ger. soldiers who fell into H. hands. Leutwein, regarded as too lenient, was replaced by von Trotha, noted in Berlin for the severity of his dealings with natives. Von Trotha trapped sev. of the H. leaders with treacherous enticements to peace talks and then issued his notorious *Vernichtungsbefehl* (extermination order) under which no H.—man, woman, or child—was to receive mercy or quarter. The Ger. soldiers were ordered to kill and take no prisoners and von Trotha explained afterwards that he wished to ensure that never again would there be another H. rebellion.

The order was issued against an already defeated people, but for nearly 3 years the leaderless and disorganised H.s were hunted like the wild game of the veld and brutally executed. The full story of this typical Ger. sadism, based on the sworn descriptions of eye witnesses, has been told in a bulky official report presented to the Brit. and South African Parliaments (pub. by H.M.S.O., London, as Cmd. 9146 of 1918). The war ended in 1907 with the H., Nama, and Berg Damara tribes utterly broken and scattered to the winds, some taking refuge in adjoining Brit. ter. Eighty per cent of the H. people had disappeared and more than half the Hottentots, while the Berg Damaras fared little better. The H.s in 1893 numbered 100,000; in the official census of 1911 they numbered only 15,130. They now number 32,921.

Heresy (Gk *hairesis*, choice), a term in theology, signifying 'a choice of doctrine'. In the N.T. it is used with various meanings: in the Acts of the Apostles it is applied to the Pharisees and Sadducees; in the Epistles of St Paul it is used to denote the divs. in the Christian Church; and in St Peter's Epistle the modern meaning 'falsely chosen' is first suggested in the words, 'Among you also there shall be false teachers, who shall privily bring in destructive heresies, denying even the master that bought them,' etc. Again, it was used by St Ignatius to signify theological error; and as the doctrine became more important it was restricted to views at variance with the recognised creed. H., according to St Thomas Aquinas, implies a profession of Christian belief; the heretic is right in the end he proposes to himself, but wrong in the means to that end. Even in apostolic times, H.s existed in the Church, and before the Council of Nicaea there existed many sects; but these earlier H.s were chiefly concerned with the introduction of Jewish or pagan elements into the faith of the Church, and were punishable by excommunication, etc., whereas the later H.s were differences in interpretation of Christian truth, and were regarded as legal offences, and punished accordingly. Constantine enacted sev. severe laws for the repression of H., which appear under the title 'De Haereticis' in the Justinian code, and the penalty of death is even included among these. In the Eng. law the offender was tried by the bishop and his council, and then handed over to the civil authorities for punishment. But the statute of Henry IV (De haereticis comburendo) empowered the diocesan to hand over the criminal to the sheriff without waiting for the king's writ. This statute remained in force until Charles II's reign, after which time the punishment of heretics was left to the eccles. courts.

Hereward the Wake (fl. 1070-1), Eng. outlaw, received his title of 'the Wake' from John of Peterborough. According to Domesday Book he was the owner of lands in Lincs. He headed the rising of the Eng. at Ely in 1070, and plundered Peterborough with the help of the Danes.

He was joined by Morcar and Ethelwin, bishop of Durham, and held out against William until 1071, when Ethelwin and Morcar surrendered. H. is said to have escaped. According to Gaimar he was pardoned by William, whom he accompanied to Maine, where he was murdered by the Normans; but there is no conclusive evidence about his activities after 1071. There is a romantic novel about H. by Charles Kingsley, pub. 1866.

Herford, Oliver (1863-1935), humorous writer, b. Sheffield, son of a Unitarian clergyman who moved to the U.S.A. and was minister of churches in Boston and Chicago. Educ. at Antioch College, Ohio, the Slade School of Art, and Julien's in Paris, young H. settled in New York and worked for the magazines as versifier and artist. Among some 50 books of fanciful nonsense he pub. *Pen and Inklings*, 1893, *Artful Anticks*, 1894, *Rubaiyat of a Persian Kitten*, 1904, *A Little Book of Bores*, 1906, *Cupid's Encyclopaedia*, 1910, *The Jingle-Jungle Book*, 1913, *This Giddy Globe*, 1919, and *The Deb's Dictionary*, 1931.

Herford, Ger. tn in the Land of North Rhine-Westphalia (q.v.), on the Werre and the Aa, 102 m. NE. of Düsseldorf (q.v.). It once belonged to the Hanseatic League (q.v.). It has a college of sacred music and is the H.Q. of the NW. Ger. Philharmonic Orchestra. Furniture, carpets, metal goods, and chocolate are manufactured. Pop. 55,000.

Hergenröther, Joseph von (1824-90), Ger. theologian and historian. He was author of *Anti-Janus*, 1870, in which he defended the doctrine of papal infallibility. The work made a great sensation, and he was made a prelate of the papal household in 1877, becoming a cardinal in 1879, and curator of the Vatican archives. He also wrote *Photius, Patriarch von Konstantinopel*, 1867-9, *Katholische Kirche und Christlicher Staat* (a book on the relations of Church and State), 1872, a universal Church hist., 1876-80, and a hist. of the papal states since the Revolution. See monograph by J. Stammering, 1892.

Hergeshelmer, Joseph (1880-1954), Amer. novelist, b. Philadelphia, of Ger. and Scottish descent. He attended the Pennsylvania Academy of Fine Arts, but turned from painting to writing. His earliest pub. novel was *The Lay Anthony*, 1914, but his first of real importance was *The Three Black Pennys*, 1917, which was followed by *Tubal Cain*, 1918; both of these novels are studies in the triumph of personality. *Java Head*, 1919, and *The Bright Shaul*, 1922, have oriental settings; *Linda Condon*, 1919, and *Cytherea*, 1922, have been described as problem stories; and *Balisand*, 1924, *The Limestone Tree*, 1931, and *The Foolscap Rose*, 1934, are historical novels. H. also wrote many short stories, of which the most famous, 'Tol'ble David,' appears in the vol. entitled *Happy End*, 1919. From *an Old House*, 1925, is autobiographical.

Hergest, Red Book of, see **MABINGOGON**. **Heri Rud**, or **Hari Rud**, riv. of Afghanistan, Asia, rises in the Koh-i-baba Mts. It

flows W. for 300 m. to Herat, turns N. at Kushan, and is joined at Pul-i-Khatun by the Keshaf Rud. At Sarakhs it is called Tejend. It enters Turkmenistan and is lost in the Kara-Kum desert. It contains quantities of fish. Length 650 m.

Heringsdorf, Ger. tn, on the NE. coast of the is. of Usedom (q.v.). It is a popular seaside and health resort. Pop. 2500.

Heriot, George (1563-1624), Scottish goldsmith, b. Edinburgh. In 1601 he became jeweller to James VI, having already been appointed in 1597 goldsmith to his queen, Anne of Denmark.

In 1820 a grant was made to him of the imposition on sugar for 3 years, and out of the proceeds he founded G. H.'s School (q.v.), Edinburgh. The fund of £23,625 estab. under his will for this purpose had so increased by 1885 that a subsidy was made to provide a technical college for older students called the H.-Watt College (q.v.).

Heriot, curious archaic right (now obsolete) incident to copyhold tenure, by which the lord of the manor was entitled, on the death of a tenant, to seize his best beast or other chattel. A H. came in Saxon times to be really a tribute of war-horses, weapons, or armour due to the king on the death of a thane. Subsequently rendered obsolete by the institution of reliefs, or sums paid by a vassal on taking up his estate.

Heriot-Watt College, Edinburgh, institution providing day instruction in various branches of engineering and applied science leading to univ. degrees and to associateships of the college, and evening and part-time instruction in scientific, technical, and commercial subjects, including management studies. The college grew from the Mechanics Institute (1821) and the Watt Institute and School of Arts (1854); it was estab. in 1885 as the H.-W. C., when responsibility for conducting it was vested in trustees of the educational fund left by George Heriot (q.v.). It forms the Central Institution for Edinburgh and SE. Scotland (recognised 1901), and was affiliated to Edinburgh Univ. in 1933.

Herisau, tn in the canton of Appenzell, Switzerland, cap. of the half-canton of Ausser-Rhoden, 7 m. SW. of St. Gallen. It contains an old bell-tower and tn hall. Cotton goods and embroidery are manufactured. Pop. 14,000.

Heristal, see HERSTAL.

Heritable and Moveable, in Scots law, a fundamental distinction between legal rights and things, more or less parallel to the Eng. classification of things real and personal. The distinction is mainly of importance in respect of the rights of an heir as opposed to those of the executors or next of kin of a deceased person. The distinction does not necessarily correspond to the physical distinction between moveable and immoveable property, although, generally speaking, all rights in or connected with land are *heritable*, and whatever can be moved without injury to

itself or the property with which it is physically connected is *moveable* property. But, as in the Eng. law of fixtures (q.v.), things which are physically moveable may, in Scots law, become heritable by accession (Lat. *accedo*, to add), and conversely, things in their nature heritable may be constructively converted into moveables by being made part of a moveable whole, as e.g. heritable things made part of the common property of a trading company.

Heritable Jurisdiction. In Scotland all jurisdictions were originally personal, i.e. granted in consideration of the fitness of the grantee, but when the feudal system was introduced certain jurisdictions, such as sheriffships, were annexed to lands and became heritable, like the lands to which they were annexed. Later, when sheriffships ceased to be territorial, the crown made heritable grants of such jurisdiction to landowners. The Jurisdiction Act of 1746, in consequence of the Jacobite rebellion of 1745, abolished all H. J.s, compensated the persons who owned them, and made jurisdictions personal to the king's courts.

Heritable Securities, or Securities on Heritable Estates, in Scots law, include all bonds, heritable and of annuity, instruments entitling a creditor to appropriate the rents of land until debts are paid, and all deeds whatsoever capable of constituting a security for debt over lands or the rents and profits of lands, and since 1874 also securities by way of ground-annual (q.v.). The form of a H. S. is either by (1) a direct conveyance of the lands either subject to the right of redemption or absolutely, or (2) by real or reserved burden containing no disposition of the lands. A H. S. is extinguished by formal redemption.

Heritor, in Scots law, formerly denoted a par. landowner who was liable for a share of the cost of building or maintaining the church or manse. Since 1925 the property and endowments of the Church of Scotland and the liability for maintaining them have been transferred to the Church of Scotland General Trustees. The term is now used to denote a landowner liable for payment of a minister's stipend.

Herkomer, Sir Hubert von (1849-1914), painter, b. Waal, in Bavaria; son of Lorenz H., master-joiner. His parents took him to America when he was 2; after 6 years there, they came to England. He first studied at the School of Art at Southampton, but in 1866 went to South Kensington. He exhibited at the Royal Academy in 1869, but made his reputation in 1875 by 'The Last Muster,' hung that year. A.R.A., 1879; R.A., 1890; Slade prof. of fine arts at Oxford, 1885-94. In 1883 he founded the H. School of Art at Bushey, which he directed until 1904. In 1907 he was made hon. D.C.L. Oxon, and knighted. An associate of the Institut de France and of the Belgian Academy. His works include: 'Found,' 1885, and 'The Chapel of Charterhouse,' 1889, both in the Tate Gallery. He

experimented in sculpture and painted portraits and life-size groups. Long conspicuous by reason of his great beard, he was clean-shaven in later years.

Herm, small is. of the Channel Is. group, 8 m. from Guernsey, from which it can be visited by boat. After the First World War it was developed as a holiday resort. There is a remarkable shell beach. H. still has its own stamps which are sought after by collectors.

Hermæ, The, Phallic pillars which generally terminated in a head of Hermes. They stood in Attica in the streets of the tns, and after the time of Hipparchus, son of Pisistratus, were also erected along the country roads as milestones, Hermes being the god of traffic. They were particularly numerous in Athens, and in the agora formed a long colonnade from the Hall of Paintings to the King's Hall. It was the charge of sacrilegiously mutilating the H. that caused Alcibiades to flee from Athens in 415 and join the Spartans.

Hermadad, The (Sp. 'brotherhood'), association of the cities in Aragon and Castile, formed in the middle of the 13th cent. to defend their liberties. It was more firmly organised in 1284, when Sancho IV came to the throne with the express object of resisting the tyranny and exactions of the nobles, and it received favour from Ferdinand and Isabella, who endowed it with large powers of summary jurisdiction. But as the power of the crown increased, so that of the H. decreased, and about the middle of the 16th cent. it ceased to exist.

Hermann, or **Herman**, see ARMINIUS.

Hermann, Johann Gottfried Jakob (1772-1848), Ger. classical scholar, b. Leipzig. He was educ. at the univ. of his native city, and was made prof. of philosophy there in 1798, becoming prof. of eloquence and poetry in 1803. He made a special study of classical poetical metres, publishing his *Elementa doctrinae metricae* in 1816. He also wrote on Gk grammar, and pub. *De emendanda ratione Graecae grammaticae*, 1801. His other works include eds. of sev. classical authors. See Sir J. E. Sandys, *History of Classical Scholarship*, vol. III, 1908.

Hermannsson, Halldór (1878-), Icelandic scholar, formerly prof. of the Scandinavian languages in Cornell Univ. (q.v.) and librarian of the Fiske Icelandic Collection in Cornell Univ. Library. Among his major works are the *Catalogue* of that collection (3 vols.) and his *Islandica*, of which 24 vols. appeared under his editorship.

Hermannstadt, see SIBIU.

Hermanric, or **Ermanaric** (d. AD 375), king of the Ostrogoths, founder of their kingdom, which probably included N. Hungary, Lithuania, and S. Russia. He was defeated by the Huns under Valamir and is said to have committed suicide. Another tradition states that he was tortured to death by the brothers of his daughter-in-law, whom he had had cruelly put to death.

Hermant, Abel (1862-1950), Fr. novelist, b. Paris. He was president of the

Société des Gens de Lettres (1902), and member of the Fr. Academy until 1945. His first novels belong to the naturalist school, but later he found his own ironical style in novels satirising the bourgeoisie. *Mémoires pour servir à l'histoire de la société*, 1905, is the general title of his chief work in this vein. *Le Caravanérat*, 1917, a study of wealthy cosmopolitans in Paris, is probably his most widely known book. Other works: *La Mission de Cruchod*, 1885, *Madoré*, 1888, *La Carrière*, 1894, *Cœurs privilégiés*, 1903, *L'Estrouffe*, 1904, *La Belle Madame Héber*, 1905, *La Journée brève*, 1920, *La Petite Femme*, 1923, *Le cycle de lord Chelsea* (4 vols.), 1925. See R. Peltier, *Abel Hermant*, 1924; A. Thérive, *Essai sur A. Hermant*, 1926.

Hermaphrodite, so named from the mythical *Hermaphroditus* (q.v.), is a living organism containing in itself a combination of the essential male and female functions and structures. It is very doubtful if true hermaphroditism is present in the higher animals, though it is common in many of the lower orders, as in the sluggish leech and snail, the fixed oyster, or the parasitic tapeworm. Many flowering plants are hermaphroditic, though of varying degrees of intimacy; in the case of the arum, the male organs are situated above and distinct from the female organs, but in the orchid the stamens and carpels are united; this is paralleled in the case of the leech, where the 2 elements are distinct and separate, though not so in the snail. Some animals may pass through embryonic hermaphroditism, though this condition is doubtful in man as sex appears to be predetermined in the fertilised ovum. (See HEREDITY.) Self-fertilisation is largely prevented by the 2 elements developing at different times in the organism. This 'want of time keeping' is termed *dichogamy* in botany, and may be either *protandrous dichogamy*, in which the stamens reach maturity first, or *protogynous dichogamy*, in which the carpels first reach full development. The earlier maturing of the male element is the more common occurrence, the hag-fish providing an example from the animal kingdom. Self-fertilisation among animals is rare, but it is found in the fish *Serranus* and in the tape-worm.

Abnormal hermaphroditism is occasionally found in fish and birds, where an ovary is situated at one side, and a testis at the other; often one organ only develops fully and predominates, with mere indications in the secondary sexual characters of the other sex. The condition must be clearly distinguished from gynandromorphism (q.v.) which occurs occasionally in insects, where, for example, the left-hand side of the animal may be perfectly female, and the right, perfectly male. The secondary sexual characters of these animals are determined by the genetic constitution of the individual cells locally, and not, as in higher animals, by the hormonal secretions of the sex glands.

False hermaphroditism may occur in higher animals, where malformation has

resulted in an animal of one sex (i.e. with one kind of sex organ) possessing the exterior appearance of the other. This is apparently because the secondary sex characters are determined by hormone balance, and it is particularly interesting that this can modify the mental, as well as physical characters. Despite discussion on the relation of hermaphroditism to primitive conditions, it is generally considered that this is neither a survival nor a reversion to a primitive state but a secondary acquisition. Clearly some rearrangement of genetical material can take place even with self-fertilisation, and the condition is typical in sedentary and restricted environments.

Hermaphroditus, son of Hermes and Aphrodite, b. on Mt Ida. He excited the love of the nymph of the Carian fountain, Salmacis, who prayed that she might be united to him. They were made into one person, having the characteristics of both sexes.

Hermas, see SHEPHERD OF HERMAS.

Hermeneutics (Lat. *ars hermeneutica*, the interpretive art; from Hermes, the messenger of the gods), the explanation of the Holy Scriptures. See EXEGESIS.

Hermes (Rom. *Mercurius*), son of Zeus and Maia, a many-sided god whose chief characteristics were inventiveness and versatility, fascination, trickery, and cunning. He invented the lyre, using the shell of a tortoise, and stole 50 head of cattle from his brother Apollo on the very day of his birth. He was found out through Apollo's gift of prophecy, but was pardoned and granted his brother's friendship and various privileges in exchange for his wonderful musical instrument. Mt Cyllene in Arcadia was his reputed bp. and the chief seat of his cult. He was closely connected with almost every phase of life. He was both the messenger of the gods and the guide of the dead to Hades (*Psychopompos*). As god of the roads and of wayfarers he was honoured by stone heaps and pillars (see HERMAE). As god of exchange and barter, and even patron of thieves, he was regarded as the giver of gain—any unexpected windfall being called 'hermean.' From this may have come the idea of H. as a god of fertility. He was also the god of dreams, gymnastics, and eloquence. As herald he was mostly represented in art with winged feet, a flat broad-brimmed hat (*kerykion*), and a wand (*petasos* or *caduceus*). See J. G. Frazer, *Golden Bough*, iii, 1900; A. Lang, *Myth, Ritual, and Religion*, ii, 1887; L. R. Farnell, *The Cults of the Greek States*, v, 1909; C. Seitzman, *The Twelve Olympians*, 1962.

Hermes, Georg (1775–1831), Ger. Rom. Catholic theologian and philosopher. He was founder of the school of Hermesians. His rationalistic doctrines, influenced to some extent by Kant and Fichte, were embodied in his *Einleitung in die christlich-katholische Theologie*, 1818–29. They were in high favour till the death of Spiegel, archbishop of Cologne, in 1836. Pope Gregory XVI issued a brief condemning

his teaching 2 years later, but by that time his school had practically vanished. His other prin. work was *Christlich-katholische Dogmatik*, 1834–6. See W. Esser, *Denkschrift auf Georg Hermes*, 1839; K. Eschweiler, *Die zwei Wege der neuern Theologie*, 1926.

Hermes Trismegistus, see HERMETIC BOOKS.

Hermetic Books, a collection of Gk and Lat. writings ascribed to 'Hermes Trismegistus,' i.e. Thoth (q.v., the Egyptian god of wisdom), with whom Hermes was identified. They are not, as was once supposed, of immense antiquity, but date, in their present form, from the second half of the 3rd cent. AD. They are of no great value from the philosophical standpoint, but provide important evidence of religious thought at that period. Their central doctrine appears to be that of salvation through true *gnosis* (knowledge) derived partly through instruction and partly through initiation. They contain few, if any, traces of Jewish or Christian teaching, but pre-suppose that of Plato's *Timaeus* and frequently appeal to the theory of astrological influences upon the sensible world. The best things in the collection are 4 'hymns of thanksgiving' which strike a high note of mystical devotion. See the ed. and trans. by W. Scott and A. S. Ferguson, 4 vols., 1924–36; see also A. D. Nock and A. J. Festugière, *Hermès Trismégiste*, 2 vols., 1945.

Hermetical Seal, in alchemy and chem., is the method of sealing a glass vessel by actually fusing the glass, without employment of a cork or stopper. It is so called after Hermes Trismegistus, mythical founder of chem.

Hermias: 1. Gk philosopher of the Alexandrian school, and a disciple of Proclus. Wrote a commentary on Plato's *Phaedrus*.

2. Christian apologist and philosopher of the 4th cent. One small thesis of his is extant, the *Diasurmos tōn exō philosophōn*, in which he scoffs at the pagan philosophers for their illogicality. There is an ed. by I. C. T. von Otto in the *Corpus apologetarum*, Jena, 1872. See C. E. Freppel, *Les Apologistes*, 2nd ed., 1870.

Hermione (mod. Kastri), an anct coast vil. of Greece, prov. Argolis and Corinthia. The rocky peninsula of Visti forms a double port N. and S. Ruins of a temple of Poseidon remain. Pop. about 3000.

Hermit (Gk *eremites*, a solitary; from *erēmia*, a desert), name given to one who retires into solitude in order to live a more holy life. The words 'hermit' and 'eremite' were apparently used indiscriminately until the middle of the 17th cent., but 'hermit' is the spelling now generally adopted, 'eremite' appearing only in poetry, etc. Anchorite and recluse are other synonyms. As early as the 3rd cent. H.s began to appear in the Christian Church, and the advocates of asceticism were the first to set the example by withdrawing from the cities and taking up their abode in rudely-formed huts in deserts or in forests. But these, as a rule, went in companies, whereas the H.

went a step further and withdrew altogether from mankind, living alone. The first H. is said to have been Paul, a native of the Lower Thebaid, who, in the time of the Decian persecution (250), fled into the desert. His story is told by St Jerome, who records that he was visited by St Anthony, another anchorite, who was generally held to be the first great example and preacher of the H. life. But the Stylites, who spent their lives at the tops of pillars, and the Bosci, who lived on herbs, were not true H.s, nor were those who, in later times, separated themselves from their fellow-men to live in caves solely to avoid intercourse with society, and not from any religious motives. Eremitism was not so popular in the W. as in the E. Church, probably owing to the unsuitability of the climate, and as monasteries developed H.s became more scarce. H.s are now generally associated in communities, such as the Camaldolese and the Carthusians. They live in silence and as solitaries, though they meet for worship and for occasional recreation as required by the Church.

Hermit-crab, member of suborder Anomura, unsymmetrical decapod crustaceans characterised by a hook-like attachment to the pleopods, by means of which the animal can secure itself within the mollusc shell into which it thrusts its large, naked abdomen. *Eupagurus bernhardus*, the commonest Brit. species, generally inhabits the shell of the whelk. See also COMMENSALISM.

Hermitage, see RHÔNE WINES.

Hermite, Charles (1822-1901), Fr. mathematician. He proved the transcendence of e , 1873, and suggested the approximation $e = \frac{58291}{21444}$ (later value $e = 2.718282$).

Hermocrates (c. 460-407 BC), Syracusan statesman and general, who succeeded in uniting the Siceliots (424) so as to enable them to resist the Athenian expedition against Sicily (415). After the Athenian defeat (413) he helped Sparta against Athens, and held a high command at the naval battle of Cynossema (412). On his defeat at Cyzicus he was deprived of his command and exiled (409). H. fought later against Carthage, and was killed in attempting to return to Syracuse (407). He was one of the most energetic, patriotic, and incorruptible leaders of antiquity. See Thuc. iv.-viii.; Diod. xiii.; G. Grote, *History of Greece*, x. 81, 1846-56.

Hermogenes (fl. AD 170), Gk rhetorician of Tarsus, Cilicia. At the age of 15 his reputation as orator and lecturer won him the favour of Marcus Aurelius (AD 161-80), who soon made him public teacher of oratory. At the age of 18 he pub. his *Art of Speaking*, 5 sections of which have survived. These were last ed. by H. Rabe, 1913. At 25 H.'s intellectual faculties gave way.

Hermogenes (fl. AD 168-200), an heresiarch, originally a painter and pagan philosopher of the school of Zeno. Converted to Christianity, he elaborated a system attempting to unite Stoic ideas

and Christian dogmas. Tertullian accused him of heresy in *Adversus Hermogenem*.

See Theodoret, *Fab. Haeret.* i. 19.

Hermion (modern Jebel-esh-Sheikh), mt-ridge and culminating point, forming S. extremity of the Anti-Libanus range, Lebanon, on the border of Israel. Called Sirion by the Sidonians and Senir by the Amorites. The modern Arabs call it Jebel-esh-Sheikh, 'Old Man Mountain,' or Jebel-eth-Thelji, 'snow mount.' The crown has 3 peaks (c. 9160 ft high) covered with snow for most of the year, and it towers high above the anct city of Dan and the sources of the Jordan. The lower slopes have rich vegetation and are planted with vines and fruit-trees. Ruins of anct temples surround it, mostly consecrated to Baal. Heb. poetry constantly mentions Mt H.

Hermionthis (modern Erment), tn of Kena prov., Upper Egypt, on R. Nile, 8 m. from Thebes. As the anct Egyptian 'On of the South' it was famous for its worship of the hawk-headed god Mont (Zeus) and Horus (Apollo). There are ruins of a temple of Cleopatra's time. The burial place of the sacred bulls of Mont was discovered in 1927. The modern tn has sugar refineries, post and telegraph offices, and a railway station.

Hermoupolis, or Syros, port and cap. of Syros Is., Greece, and the only industrial tn of the Cyclades Is. It is the see of an Orthodox archbishop and a Rom. Catholic bishop. At one time the chief port of Greece, it declined with the growth of the Piraeus in the late 19th cent. It is still an important centre for the coastal trade of the Is. Cotton and Turkish delight are manufactured and there are ship-repairing plants. Pop. 17,000.

Hernández, José (1834-94), Argentine poet; b. San Martín, prov. of Buenos Aires. In late 1860's, ed. *Revista del Río de la Plata*, Buenos Aires. Follower of insurgent López Jordán, 1870-2. Many years legislator in native prov. He is celebrated for the poem *Martin Fierro*, 1878, an epic of the Argentine. See Walter Owen, *The Gaucho Martin Fierro* (Eng. verse trans.), 1935.

Hernandiaceae, order of dicotyledonous tropical trees, closely allied to the Lauraceae (q.v.), but differing in that the flowers are epigynous. It received its name from the Sp. naturalist Hernandez, who was sent to Mexico by Philip II. There are 4 genera in all, and the chief of these is *Hernandia*.

Hernani, Sp. tn in the prov. of Guipúzcoa. It has a modern palace, and its church contains the tomb of the man who took Francis I (q.v.) prisoner at Pavia. Cotton is manufactured, and there are iron mines. Pop. 5000.

Herne, James A. (James Aherne) (1839-1901), Amer. actor and playwright, b. Cohoes, New York State. He acted in many plays of his own, the first being *Hearts of Oak*, 1878. *Drifting Apart*, 1885, *The Minute Men*, 1886, and *Margaret Fleming*, 1890, followed, but his

great success was the rural comedy *Shore Acres*, performed at Chicago, 1892, which ran for nearly 6 years. His last production was *Sag Harbour*, 1900. See L. C. Strang, *Famous Actors of the Day in America*, 1900.

Herne, Ger. industrial tn in the Land of North Rhine-Westphalia (q.v.), 32 m. N.E. of Düsseldorf (q.v.). It is in the Ruhr (q.v.) basin, and is the terminus of the Rhine-H. canal and of a link with the Dortmund-Ems canal (q.v.). There are coal-mines, and iron, steel, and engineering industries. Pop. 115,800.

Herne Bay, residential holiday resort on the N. coast of Kent, England, on the estuary of the R. Thames, and 6 m. N.E. of Canterbury. Pop. 17,680.

Herne Hill, residential dist. in S. London in the bor. of Lambeth. Ruskin (q.v.) spent his early life here.

Herne the Hunter, traditional figure of medieval Eng. legend, a keeper in Windsor Forest whose ghost was popularly supposed to roam at midnight near an old oak, famed as 'Herno's Oak.' The oak was thought to have been blasted by the hunter's evil spirit, and was blown down in 1863 (c. 650 years old). Shakespeare refers sev. times to H. and his oak in *The Merry Wives of Windsor*.

Hernia, or **Rupture**, the protrusion of any part of the body from the cavity in which it should be contained. *Cerebral H.*, protrusion of brain substance through the skull. *Femoral H.*, protrusion of abdominal contents through the femoral canal. *Hiatus H.*, protrusion of abdominal contents through the oesophageal opening in the diaphragm. *Incisional H.*, protrusion of abdominal contents through an operation incision. *Inguinal H.*, protrusion of abdominal contents through the inguinal canal. In popular language, a rupture means an extrusion of a portion of the contents (usually a part of the intestine) of the abdominal cavity. A rupture may be present at birth, from the failure of closure of the cavity, as in the case of an umbilical H., when the navel is unclosed at birth. Again, ruptures may occur in early life, and are then known as infantile H.s. The opening of an infantile umbilical H. usually closes with age, the closure being generally firm and permanent. An umbilical H. may appear in fat individuals, particularly in females on account of pregnancy, and, if neglected, may attain an enormous size. Ruptures are generally due to weakness of the body wall, though they are more liable to occur in individuals who throw considerable strain on their abdominal walls, as, for example, those who do heavy work. Persons who are subject to bronchitis are apt to suffer from H., the condition being brought about by the strain of coughing. It may also be brought about at stool through excessive straining to empty the rectum. The most common form of H. occurs in the groin, through the failure of closure of the canals, i.e. passages, in this region, or the reopening of these canals in later life. The first detectable sign of a H. is a swelling which may disappear on

lying down or with firm but gentle pressure with the fingers. Sometimes a H. becomes strangulated, the contents being gripped in the constriction of the neck of the hernial sac. Strangulation cuts off the blood supply and gangrene of the contents of the H. ensues unless the situation is relieved by operation. When strangulation occurs the H. becomes tender, hard, and irreducible, pain is severe and, if the bowel is involved, colicky in nature due to the obstruction, which also causes vomiting.

Hernici, It. people of Sabine race, living in Latium between the Fucine lake and the Treveris, with their cap. at Anagnia. They allied themselves with the Latins upon equal terms in 486 BC, but rebelled against the Rom. authority in 362, and again in 306 BC, when they were finally subdued. They appear to have received Rom. citizenship by about 225 BC.

Hernösand, seaport tn of Sweden, cap. of the län of Västernorrland on the W. coast of the is. of Hernö, in the Gulf of Bothnia. Pop. 16,120.

Hero and Leander, legendary Gk lovers. H. was priestess of Aphrodite at Sestos. L., a beautiful youth of Abydos, saw and fell in love with her at a festival of the goddess. Guided by a lamp, L. swam across the Hellespont nightly to visit H., but one stormy night he was drowned. In despair she cast herself from her tower and perished with him.

Hero (Heron) of Alexandria: 1. Gk mathematician and writer, probably of the latter half of the 1st cent. AD. He was especially skilled in geometry, mechanics, and pneumatics, and famous for inventing various machines and contrivances, such as 'Hero's Fountain,' a steam-engine, a water-clock, and other automata. H. discovered the formula expressing the area of a triangle in terms of its sides—

$$\sqrt{s(s-a)(s-b)(s-c)}$$
 (a, b, c being the lengths of the sides, s the semi-perimeter). See MENSURATION.

2. H. the Younger (fl. 7th or 10th cent. AD), probably a Byzantine land-surveyor, or a philosopher and writer on astronomy and warfare.

Herod, or **Herodes**: (1) *Herod the Great* (c. 73 BC–4 BC), king of the Jews, 'Great' because of his power and talents; became governor of Galilee in 47 BC. After the death of Julius Caesar he was made king of Judea by Antony (40 BC), but only made himself master of Jerusalem after a prolonged siege. He rebuilt the temple with great magnificence, and erected a theatre and amphitheatre in the city, where games in honour of Augustus were celebrated. The N.T. tells how he ordered the massacre of the Innocents at Bethlehem (Matt. II), and of his death (4 BC). The episode is entirely in keeping with his character: he massacred a large number of the Sanhedrin at his accession, executed the old high-priest Hyrcanus in 30 BC, murdered his wife Mariamne in 29 BC and her mother Alexandra in 28 BC. At the end of his

days he feared plots against his throne and executed also 3 of his sons. At the news Augustus said: 'I'd rather be a son of Herod's than a son.' Soon after H. himself *d. in agony*. (2) *Herod Antipas*, son of H. the Great, appointed Tetrarch of Galilee on his father's death. He put to death St John the Baptist because he censured H.'s marriage with his brother Philip's wife, Herodias. In AD 39 he tried to obtain the title of king, stimulated by the ambition of Herodias; but his nephew, Agrippa, prejudiced the Emperor Caligula's mind against him, and he was stripped of his dominions and exiled. He *d. in exile*. He had been, it seems, a comparatively efficient and conscientious ruler, and was universally regretted, unlike the other Herodians. (3) *Herod Agrippa I*, grandson of Salome, sister of H. the Great, and of H.'s executed son Aristobulus. He was brought up at Rome, and in AD 38 Caligula conferred on him the tetrarchy of Philip and later that of his uncle Antipas. In 41 Claudius made him king over practically all the realms of H. the Great. It was he who caused St James to be put to death and St Peter to be imprisoned. H. *d. at Caesarea in AD 44* (Acts xii.). (4) *Herod Agrippa II*, son of (3) above, was a child at his father's death. Judea was therefore annexed by Rome, and H. was given the small kingdom of Chalcis until AD 53, when he was transferred to the tetrarchy of Philip, plus Abilene and a few outlying areas. In 54 Nero added some portions of Galilee to his realm. He took the name Marcus Julius Agrippa and fraternised with the Rom. aristocracy (cf. Acts xxv.). H. lived incestuously with his sister Berenice. He sided with the Romans in the Jewish war, and after the capture of Jerusalem (70) accompanied Titus to Rome, where he *d. in 93*. With him ended the Herodian line.

Herodas, or *Herondas*, Gk poet of the 3rd cent. BC, belonging to the Alexandrian school. He was a writer of mimes, realistic dramatic scenes of everyday life, much in the style familiar from the celebrated idyll, *Gorgo and Prazinae*, of Theocritus, of whom he was a younger contemporary. They are written in racy Greek and in a curious limping metre, suitable to the talk of characters, as representing types of ordinary people, such as a schoolmaster, temple attendant, shoemaker, mistresses and their slaves, etc. Though H.'s name had long been known, fragments only had survived till the discovery in 1891 of a papyrus MS. in El Fayum, Egypt. The mimes are vivid, clean-cut sketches in dialogue, some 100 lines each in length, frequently coarse, but obviously drawn with unflinching realism from life. The best ed., with trans., is that by W. Headlam and A. D. Knox, 1922.

Herodes Atticus, see ATTICUS HERODES.

Herodians, political party of Jews, who were adherents of the Idumean dynasty and warm supporters of Herod the Great. In the N.T. they are mentioned with the Pharisees as being hostile to Jesus (Mark

iii. 6; Matt. xxii. 6). They were also called *Boethusians* by the rabbis because they were friendly to the family of Boethus.

Herodianus: 1. *Aelius* (late 2nd cent. AD), Gk grammarian, *b. Alexandria*. Chief among his grammatical works was the *General Prosody* (dedicated to Marcus Aurelius), of which fragments and sev. epitomes survive together with the complete treatise *On Anomalous Words*.

2. (3rd cent. AD), Gk historian, author of a hist. of the Rom. empire from the death of Marcus Aurelius to the accession of Gordian (180-238). This work is a valuable supplement to Dion Cassius, but is marred by serious omissions and many inaccurate dates. The best critical ed. is that of K. Stavenhagen, 1922.

Herodotus (c. 484-425 BC), Gk historian, known as the 'Father of History'; son of Lyxes and Dryo, *b. at Halicarnassus in Caria*, which was at that time a Persian dependency. Early in life he began reading on a vast scale, and during the years 464-54 it would appear that he travelled. In this latter year his relative, the epic poet Panyassis, was put to death by Lygdamis, ruler of Halicarnassus; whereupon H., who shared his views, either was exiled or fled from his native city. He continued to travel extensively in Greece and most other parts of the Mediterranean and near E., collecting a vast amount of geographical, ethnographical, and archaeological information for the purposes of his great *History*. Returning to Halicarnassus, he is said to have helped drive Lygdamis from the city, which then joined the Athenian confederacy. About 447 H. settled at Athens; but, finding it impossible to obtain the franchise, he sailed in 444 with a party of colonists who, in the following year, estab. the colony of Thurii in S. Italy, where he spent the remainder of his life. The *History* was completed by 445, when H. is said to have been awarded the sum of 10 talents as a mark of appreciation; but he seems to have revised and elaborated it during his last years at Thurii. The early books describe the rise and growth of the 2 kingdoms of Greece and Persia. Books V to IX relate the hist. of the 2 great wars of the Persian invasion. His style is very discursive, and he expatiates with great charm on the climate and geographical features of the various countries he touches upon, as well as upon the manners and customs of the strange people who inhabit them. His work has always been praised for its style, which owes its attraction partly, no doubt, to the fact that it was written primarily for recitation. Its veracity has not infrequently been questioned. With regard to anc. hist. he was no doubt very credulous, but his account of the 2 Persian wars is accepted as the great authoritative version by all modern historians. He was very diligent in collecting materials for the early part of his hist., but lacked judgment. See the text with commentary by A. H. Sayce and R. W. Macan (6 vols.), 1883-1908, and trans. by J. E. Powell

(2 vols.), 1949. See also J. E. Powell, *Herodotus*, 1939.

Heroic Play, The, term applied, first of all by Dryden, to the tragedy of the Restoration period. The chief characteristics of the heroic drama are strict observance of the unities, and careful adaptation of Fr. models, largely from Corneille and Molière. It has a marked tendency to long rhetorical and declamatory speeches, and is usually written in the heroic couplet. The link with the Elizabethan drama is Davenant, whose *Albion*, 1629, possesses all the characteristics of the heroic drama except the heroic couplet. In his preface to the *Conquest of Granada*, 1670, Dryden asserts that 'an heroic play ought to be an imitation in little of an heroic poem, and consequently that love and valour ought to be the subject of it.' Dryden was the chief exponent of the H. P., which had its vogue between 1660 and 1680. His chief plays of this sort are: *The Indian Queen*, 1664, *Tyrannic Love or the Royal Martyr*, 1669, *The Conquest of Granada*, 1670, and *Aurengzebe*, 1675. In the last-mentioned play, Dryden confessed himself 'weary of his long-loved mistress, Rhyme,' and henceforth devoted himself to blank-verse tragedy. In 1671 the duke of Buckingham and other wits had parodied the H. P. in a delightful burlesque, *The Rehearsal*. Nevertheless, the H. P. had not entirely disappeared by the end of the century. See J. Maidment and W. Logan, *Dramatists of the Restoration*, 1873, and W. Ker, *Essays of John Dryden*, 1900.

Heroic Verse, in prosody, term applied to iambic 5-beat lines, rhyming in pairs, commonly called heroic couplets. The name is given from its use in the heroic play (q.v.) of the time of Dryden, but the metre was first used by Chaucer in the *Legend of Good Women*. It reached its most polished form with Dryden and Pope, but has since been used with great freedom by other poets, such as Byron and Keats. In other literatures, H. V. is applied to the metre of epic poetry, namely the hexameter in Greek and Lat., the alexandrine in Fr., and the hendecasyllable in Italian.

Heroin, or **Diacetylmorphine**, drug obtained from morphine and administered by injection. It acts in much the same way as morphine, but on account of its special influences on the nervous system of the breathing apparatus it is used to relieve paroxysms of coughing. Addiction to H. is more easily acquired than morphine addiction because of the intense euphoria which H. produces and the absence of unpleasant side effects such as nausea, vomiting, and constipation. In 1931 the Conference of the Control of Narcotic Drugs drew attention to the highly dangerous character of H. as a drug of addiction and the Permanent Opium Board in 1949 pub. a report which noted 'an alarming increase' in its use. The manu. and importation of H. are forbidden in the U.S.A. and its use is actively discouraged in many other countries. The U.N.O. is trying to get

its member states to forbid manu. of the drug but a proposal to this effect in Britain in 1955 was abandoned, largely on account of protests from the Brit. Medical Association.

Hérolf, Louis Joseph Ferdinand (1791-1833), Fr. composer, b. Paris, son of an accomplished pianist. He studied at the Paris Conservatory, under Méhul, and in 1812 gained the Grand Prix de Rome. He then went to Italy and also visited Vienna. His first opera was *La Gioventù di Enrico*, first produced at Naples, 1815, with moderate success. In Paris he collaborated with Boieldieu in writing an opera entitled *Charles de France*. His own first Fr. opera was *Les Rosières*, 1817, which had a good reception. This was followed by many other works, of which the best known are *La Clochette*, 1817 (for the Vienna production of which Schubert wrote 2 extra numbers), *Zampa*, 1831, which was immensely successful in France and Germany, and *Le Pré aux Clercs*, 1832, a graceful and lively work. See B. Jouvin, *Hérolf, sa vie et ses œuvres*, 1868; and A. Pougin, *Hérolf*, 1908.

Heron, name given to the species of ciconiiform birds belonging to the family Ardeidae; they are characterised by long necks and legs, slender bodies, and beautiful plumage. They frequent lakes, fens, and the mud-flats found on sandy shores, where they wade into the water and often stand ankle-deep for a considerable time, searching for prey; they capture fish, molluscs, worms, etc., by spearing them with their long bill, and their appetite seems insatiable. H.s. nest on trees, bushes, ivy-covered rocks, or reeds, making a loose fabric of sticks lined with grass, leaves, etc.; they lay greenish or drab-coloured eggs, varying in number from 2 to 7 with the different species. *Ardea* is the largest genus, and its distribution is worldwide; *A. cinerea*, the common European H., is found also in Africa, Asia, Japan, and Australia; white H.s. or egrets, are generally smaller than other species, *A. garzetta* being the smallest of all; this beautiful bird, which is called the little egret, has long filamentous plumes and 2 lengthened crest feathers, which are said to be temporarily lost after breeding; this species is occasionally found in Britain; *A. alba*, the great white H., ranges from Central Europe to Africa and Asia; *A. occidentalis*, the white H. of Florida, is an even larger bird; *A. goliath*, probably the largest of all species, has a reddish head, neck, and under-surface. The genus *Nycticorax*, or night H.s. are remarkable for the long, occipital feathers, blackish or white in colour, which are lost for a time after breeding; the species vary greatly in colouring. *N. nycticorax*, which occasionally visits Brit. shores, being greenish-black. *Botaurus*, the bitterns, belong to the same family as H.s.

Heron, Boatbilled, see **BOATBILL**.

Herondas, see **HERODAS**.

Herophilus (325-280 BC), physician, who was founder of one of the earliest schools of medicine in Alexandria. He

was a Greek of Chalcedon and a follower of Hippocrates, and was famous for his researches in anatomy, though he seems to have been equally skilled in the use of drugs. See C. F. Marx, *Herophilus*, 1838.

Herostratus, an Ephesian, who so hungered for notoriety that on the night of the birth of Alexander the Great (356 BC) he set fire to the temple of Artemis at Ephesus.

Herpes, inflammatory skin disease characterised by cluster of small vesicles. The term is applied to *H. simplex*, a virus infection in which vesicles appear round the mouth or nose (so-called 'cold spots') or the borders of the genital regions. For *H. zoster*, see SHINGLES.

Herpetology (Gk *herpeton*, a reptile, and *logos*, discourse), science treating of reptiles, their habits, structure, and distribution; it is sometimes extended to include certain amphibians, such as the Batrachia. See also REPTILES.

Herpeton, see ERPEYON.

Herreninsel, see CHIEFSEE.

Herrera, Fernando de (1534-97), Sp. poet, known as El Divino, b. Seville. He had a profound admiration for the It. poets and took a large share in introducing their metrical systems into Spain. His lyrical poetry, influenced by Petrarch, celebrates his platonic love for the countess of Gelves. His odes, especially those on the Battle of Lepanto and Don Juan of Austria, and his elegies on King Sebastian of Portugal and Sir Thomas More, are marked by grandeur, melody, and profundity, and entitle him to rank as the greatest of Andalusian poets. All his works are printed in the *Biblioteca de autores españoles*, xxxii. See A. Coster, *F. de Herrera, el Divino*, 1908; R. Marín, *El Divino Herrera y la Condesa de Gelves*, 1911.

Herrera, Francisco de (1576-1656), surnamed *El Viejo* (the Elder), Sp. historical and fresco painter, b. Seville. He was a man of such violent temper and coarse manners that neither his children nor pupils would remain with him, although his son and Velázquez (q.v.) learnt from him his energy of design and bold, vigorous touch. His skill as a worker in bronze led to his being accused of coinage false money, and he sought refuge in the Jesuits' College, Seville, which he adorned with his celebrated 'St Hermengild in Glory,' and which won him the pardon of Philip IV.

Herrera, Francisco (1622-85), surnamed 'El Mozo' (the Younger), to distinguish him from his father, 'El Viejo' (q.v.), b. Seville, from which he fled to Rome on account of his father's cruelty. He became renowned for his pictures of still life, flowers, fruit, and fish. He also painted frescoes, and, in later life, portraits. On his return to Seville he became subdirector of its academy under Murillo (1660). His best picture is, perhaps, the 'San Francisco' in Seville Cathedral. 'Assumption of the Virgin' in the Atocha church in Madrid, won for him the title of painter to the king.

Herrera y Tordesillas, Antonio de (1558-

1625), Sp. historian, b. Cuellar, Segovia, Spain. He became secretary to Vespasian Gonzago, who commended him to Philip II of Spain, by whom Herrera was appointed historiographer of the Indies and of Castile. His most valuable work is *Historia general de los hechos de los Castellanos en las islas y tierra firme del Mar Océano* (Madrid), 1601-15 (trans. into Eng. 1740). He also wrote *Historia general del mundo del tiempo del Señor Rey Don Felipe II*, 1601-2.

Herrera, Sp. in the prov. of Sevilla, with a trade in agric. produce. Pop. 6000.

Herrera, see LA UNIÓN.

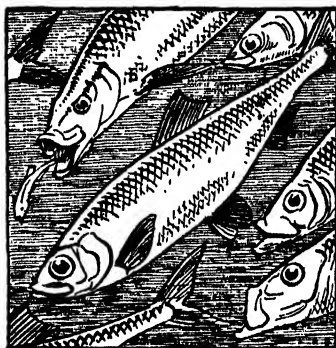
Herrick, Robert (1591-1674), poet, b. Cheapside, London, son of a goldsmith. In 1607 he was apprenticed to his uncle, one of the richest goldsmiths of the time, and during his apprenticeship joined the band of poets and wits who surrounded Ben Jonson. In 1614 he was entered as a fellow-commoner of St John's College, Cambridge, and subsequently removed to Trinity Hall and took his degree of Bachelor of Arts in 1617 and of Master of Arts in 1620. He then returned to London for a short period. Some time before 1627 he must have taken holy orders, for in that year he sailed as chaplain to the expedition to the Isle de Rhé. From 1629 to 1648 he was vicar of Dean Prior, near Totnes, Devonshire, where he wrote his immortal lyrics of the countryside and rural customs. He was ejected by the Puritans, but returned to Dean Prior in 1662 and d. there. Some poems of his were pub. in 1635, but it was not until 1648 that he pub. the *Hesperides; or the Works both Humane and Divine of Robert Herrick*. His 'divine' poems ring less true than the 'human' ones, which, written partly under the influence of Ben Jonson, but chiefly modelled on the pagan poets, possess an exquisite quality, and place him at the head of Eng. pastoral lyrists. Among his most famous lyrics may be mentioned 'Bid me to live,' 'Gather ye Rosebuds,' and 'Cherry Ripe.' H.'s poetry 'reflects the frank hilarity of the Golden Age unpreoccupied with desire and therefore unafraid of it' (John Buchan). He is happiest in themes which admit of quasi-classical treatment, but his religious verse for the most part is inferior to that of Herbert and Henry Vaughan. His complete works were ed. by W. C. Hazlitt, 1869, 1890; collected poems ed. by G. Saintsbury, 1893; L. Magnus, 1899; F. W. Moorman, 1915, 1921; and H. Wolfe, 1928. See F. W. Moorman, *Robert Herrick*, 1910; L. Mandel, *Robert Herrick, the Last Elizabethan*, 1927; E. Blunden, 'Herrick,' in *Votive Tablets*, 1931; K. I. M. Easton, *Youth Immortal, A Life of Robert Herrick*, 1936.

Herries, Sir John Maxwell, 4th Baron (c. 1512-83), Scottish politician. In early life he was a supporter of the Reformed party and a friend of John Knox, but in 1566 he cast in his lot with Mary and joined her at Dunbar. He led her cavalry at Langside, and rode with her into England in 1568. On his return to

Scotland he worked for Mary's cause and was imprisoned by the Regent Murray. In 1578 he was concerned in the plot for depriving Morton of the regency, and after Morton's death in 1581 was closely allied with the Regent Lennox in his schemes for Mary's release.

Herrin, city in Illinois, U.S.A., 55 m. NNE. of Cairo, in an agric., coal-mining, and timber area. H. is the site of the 'Herrin Massacre' in 1922, during a nationwide coal strike. Pop. 9300.

Herring (*Clupea harengus*), fish which resembles the pilchard both in habits and in shape, but which is found further N. In size it is moderately small, and has thin, silvery scales which do not extend to the head, small teeth and open gills. It has only 1 dorsal fin and 1 short ventral,



and there are no spines in the fins. The lower edge of the H. is flattened, and covered with bony plates varying sharply or serrated. It feeds largely on small copepod crustaceans of the plankton. It deposits its eggs on the bottom, which hatch out adhering in masses to stones and weeds. Its colour varies between a not very pronounced green and blue, and its scales detach when the fish is roughly handled. It is a coldwater fish, and develops to a larger size in more N. late. In the Channel it averages 12 in.; in parts of the North Sea it reaches a length of 17 in. Those caught off the Brit. Isles are smaller than those caught off Iceland, these latter being large and coarse. H.s are usually caught by drift-nets, and take about 2 years to reach maturity, their silvery scales appearing when they have grown to a length of about 1½ in. The number of eggs deposited by the female varies from 20,000 to 50,000, and the eggs are opaque and have a thick adhesive envelope. This fish is found in large quantities off the shores of the Brit. Isles, as well as along the E. border of North America, up to the coast of Behring Strait, and is known in the White Sea of Russia and down the coasts of Norway and

Denmark, and in the sea of Japan, but it is not found in the Mediterranean. It is essentially a migratory fish, never remaining in any dist. for more than a few days, and is not influenced in this by lat. or climate, for often it is earliest in the further N., and in others the reverse. The spawn is shed twice in the year, of which that of the autumn is the more conspicuous; but the season of either of these is often extended or delayed beyond the regular time. Hence, great vigilance, patience, and skill are needed in the capture of this fish. H.s formed an important source of income in ant. times, and have been used as food from time immemorial. The H. is rich in easily digestible oil: factories have been estab. for its extraction and preparation for human use. See also FISHERIES, SEA.

Herring-bone, in architecture, a diagonal arrangement of bricks, stones, wood-blocks, etc. The members all make an angle of 45 degrees with the general direction of the row, and are at right angles to the members of the row next to them.

Herriot, Edouard (1872-1957), Fr. statesman, b. Troyes (Aube). He was prof. of rhetoric at Nantes; then at Lyons—where he became councillor, 1904; mayor from 1905 (frequently re-chosen). In 1912 H. entered the Senate, and became leader of the Radical-Socialist party. He held office under Briand, 1916, and was premier and foreign minister, 1924-5. Subsequently, he was elected president of the Chamber. He secured the defeat of the Briand gov., July 1926; he then formed a ministry of the Left that lasted 2 days and fell on account of an acute crisis in the Treasury. He entered the new ministry, formed by Poincaré, as minister of public instruction; but in 1928 his party compelled him to withdraw. In 1932 he was again prime minister for 6 months, and from 1934 to 1936 minister without portfolio; he left the Radical-Socialist party in 1935, but was re-elected in 1945. H. was again president of the Chamber in 1936-42. He vigorously opposed the policy of Laval and Pétain and was deported by the Germans in 1943, being liberated 2 years later. In 1947 he was again elected president of the Chamber, resigning in Dec. 1953. His works include sev. notable literary studies. Pubs. include: *Philon le Juif*, 1897 (crowned by Academy); *Mme. Récamier et Ses Amis*, 1905, *La Russie nouvelle*, 1922, *La Forêt Normande*, 1925, *Lyons n'est plus*, 1792-6 (Lyons during the Fr. Revolution), 1927-40, *Sous l'Olivier*, 1930, *The Well-springs of Liberty*, 1946, *D'Une guerre à l'autre*, 1952.

Herrnhut, Ger. tn in the dist. of Dresden, 45 m. E. by S. of Dresden (q.v.). It is known as the H.Q. of the 'Herrnhuter', a branch of the Moravian Brethren (see MORAVIANS), founded here in 1722. There was much damage in the Second World War. Pop. 2000.

Herschel, Caroline Lucretia (1750-1848), sister of Sir Wm H., whom she assisted in his astronomical observations, b. Hanover.

She lived with her brother at Bath from 1772, and acted as his assistant when he was appointed astronomer-royal. Between 1786-97 she discovered 8 comets, 5 undoubtedly unobserved before, and many of the smaller nebulae and star clusters included in her brother's catalogue were her discoveries. In 1798 she pub. for the Royal Society *Catalogue of Five Hundred and Sixty-one Stars observed by Flamsteed*. In 1828 the Royal Astronomical Society gave her their gold medal, and made her an honorary member in 1835. See Mrs John Herschel, *Memoir and Correspondence of Caroline Herschel*, 1876.

Herschel, Sir John Frederick William (1792-1871), astronomer, son of Sir Wm H., b. Slough, Buckinghamshire, and educ. at Eton and St John's College, Cambridge, where he graduated as senior wrangler and Smith's prizeman in 1813. From 1825 to 1833 he was engaged, with Sir James South, in reviewing the nebulae and star clusters of his father's catalogues. In 1834 he estab. an observatory at Feldhausen, near Cape Town, where he spent 4 years in a review of the S. heavens, the results of which were pub. in 1847 as *Results of Astronomical Observations made at the Cape of Good Hope*, etc., one of the most important astronomical works of the 19th cent. Master of the Mint 1850-5. Inventor of various astronomical instruments, sensitised paper and the use of hyposulphite of soda for fixing in photography, and he made valuable researches on the undulatory theory of light. His miscellaneous *Essays* were pub. in 1857, and *Familiar Lectures on Scientific Subjects* in 1867.

Herschel, Sir William (1738-1822), astronomer, b. Hanover. He was educ.



SIR WILLIAM HERSCHEL

Engraved by E. Scriven from a crayon drawing by J. Russell

as a professional musician, and when he came to England in 1767 taught music in Leeds, Halifax, and other N. tns. In 1768 he was appointed organist at the Octagon Chapel, Bath. At Bath he turned his attention to astronomy, and,

with the aid of his sister and a new telescope which he constructed for himself, began his survey of the heavens. In 1781 he discovered a new planet, the Georgium Sidus (since called Uranus), and two of its satellites. In 1782 he was appointed private astronomer to George III, and went to live at Slough, where he continued the observations, discovering two of the satellites of Saturn, the phenomenon of the motion of the double stars round one another, the periods of rotation of Saturn and Venus, the constitution of nebulae, and much interesting matter about the Milky Way. In 1783 he pub. his *Motion of the Solar System in Space*. In 1789 he erected his famous telescope of 40 ft focal length and 4 ft aperture. See **HERSCHEL, CAROLINE LUCRETIA**. See E. S. Holden, *William Herschel his Life and Work*, 1881; J. B. Sidgwick, *William Herschel*, 1853.

Herschell, Sir Farrer Herschell, Baron (1837-99), lord high chancellor of Great Britain, b. Brampton, Hants. In 1860 he was called to the Bar and joined the N. circuit; in 1872 he was made Queen's Counsel. He was recorder of Carlisle (1873-80), member of Parliament for Durham (1874-85), and Solicitor-General (1880-5). In 1886 he was lord chancellor for 6 months, falling with Gladstone's administration in that year, but returning to the Woolsack with the Liberal administration (1892-5). He was appointed a member of the Anglo-Venezuelan Arbitration Commission in 1898, but while at Washington met with a fatal accident. See J. B. Atlay, *The Victorian Chancellors*, 1906-8.

Hersfeld, Bad, Ger. spa in the *Land* of Hessen (q.v.), on the Fulda, 72 m. ENE. of Wiesbaden (q.v.). Its Benedictine abbey, founded in 769, was secularised in 1648. Festival plays are held yearly in the abbey church. Textiles and machinery are manufactured. Pop. 14,000.

Herstal, tn in Belgium and suburb of Liège, 4 m. to the NE. of that city, on the R. Meuse. It is the seat of the Belgian small arms factory and cannon foundry, and has coal mines, manufs. of iron and steel. It is the reputed bp. of Pépin le Gros (q.v.). It also claims to be the bp. of Charlemagne. Pop. (1955) 28,300.

Herstmonceux, or Hurstmonceux, vil. of Sussex, England, in the Eastbourne parl. div., 9 m. from Eastbourne. The name is derived from Waleran de Monceux, who was lord of the manor in the 11th cent. There is an interesting and exceptionally well-preserved castle in the vil. H. castle was built by Sir Roger de Fiennes, treasurer to the Household of Henry VI. It was he who obtained a licence in 1441 to enclose, crenellate, and furnish with towers and battlements his manor of H. There are no brick buildings S. of the Thames earlier in date than this castle, which is probably not only the best of the early brick buildings of England but the most beautiful of Eng. baronial buildings. The mouldings and dressed work are mostly executed in greensand stone which permits of sharpness of detail. After 1740 the castle fell into neglect and

in 1777 the interior, including the buildings in the court within the main rectangular structure, were demolished and the materials used to build the mansion now known as H. Place. Little survived of the old fabric beyond the outer walls, with their towers, and portions of the inner walls. In 1911 the castle was purchased by Col. Claude Lowther, who began the work of restoration. After his death it was acquired in 1932 by Sir Paul Latham, who completed the restoration (a description of the situation of the castle will be found in Francis Grose's *Antiquities of England and Wales*, written in the 18th cent.; see also article by Sir Harold Spencer Jones, Astronomer Royal, in *Nature*, 20 July 1946). Extensive search had been made for a new site for an observatory; purity of atmosphere being an essential, the removal of the observatory from Greenwich had to be faced. H. castle was selected by the Admiralty, and along with the castle some 370 ac. of ground were acquired for the erection of the instrumental equipment and also as a safeguard against encroachment too near the observatory of other buildings. Pop. 1600.

Hertor, Christian Archibald (1896-), Amer. politician and diplomat, b. Paris of Amer. parents, and educ. at Harvard. After a diplomatic career he entered journalism. In 1931 he began his party political career as a Republican representative in the Massachusetts legislature. From 1943 to 1953 he was a Republican member of the House of Representatives, and was elected governor of Massachusetts in 1953. H. is known as a liberal Republican in the Vandenberg tradition, and as a Congressman played a prominent part in the formulation of the Marshall Plan. In 1956 Stassen (q.v.) suggested that H. should run as vice-president instead of Nixon, but H. declined to seek nomination. He was chosen to succeed Herbert Hoover junior as under-secretary of state in Dec. 1956.

Hertford, municipal bor. and co. tn of Herts, England, on the R. Lea about 24 m. N. of London. It is an administrative and educational centre and mkt tn, with light industries, including brush-making, printing, and light engineering. H. was certainly a settlement in Saxon times; the Norman mound and parts of the curtain wall of Henry II, together with the gatehouse, rebuilt in the reign of Henry VIII and now council offices, are all that remain of the castle. Here is Haileybury College (q.v.); also Christ's Hospital (originally estab. in the tn in 1690, and jointly inhabited by both boys and girls until 1902 when the boys' school was estab. at Horsham), now a public school accommodating about 300 girls. Pop. 14,460.

Hertford College, Oxford, in its present form is a modern foundation. Between 1283 and 1300 Elias of Hertford acquired one of sev. halls which stood on the site and which became known as Hart Hall. In 1312 it was bought by Bishop Stapleton, the founder of Exeter College, on which college it was dependent until the

second half of the 16th cent. In 1710 Richard Newton became principal and, in spite of strenuous opposition, succeeded in obtaining a charter to establish Hertford as a college in 1740. It lapsed in 1806 and the buildings were acquired (1816) by Magdalen Hall, which was itself dissolved in 1874, when its principal and scholars were incorporated as part of the new H. C.

Hertfordshire, or **Herts**, inland co. of England, bounded on the N. by Cambridgeshire, on the E. by Essex, on the S. by Middx, and on the W. by Buckinghamshire and Beds. The landscape is hilly and there are some fine pasture lands, picturesque parks, and wooded countryside. It belongs mainly to the Upper Cretaceous rocks which give place in the S. to the London Clay. The prin. rvs. are the Lea, Stort, and Colne; the Grand Junction Canal passes through part of the co. In 896 a battle took place in this co. between Alfred and the Danes, and in the wars of the Roses the battles of St Albans and Barnet were fought. The chief industry is agriculture, producing grain and glasshouse crops for the London market, in addition to mixed farming products. The prin. manufs. are aircraft, vehicles, paper, printing, and general engineering goods. The only minerals of importance are sand and gravel which are worked exclusively in the S. of the co. It is divided into 6 parl. divs., Hemel Hempstead, Hitchin, Hertford, St Albans, Barnet, and SW. Herts, with 1 member for each div.; and 1 bor. constituency, Watford. Pop. 661,000. See J. E. Cussans, *The History of Hertfordshire* (in 3 vols.), 1870-81; A. Mee, *Hertfordshire: London's Country Neighbour*, 1940; W. Branch Johnson, *Companion into Hertfordshire*, 1952; and Hertfordshire County Council, *Hertfordshire Survey and Plan*, 1951.

Hertha, or **Nerthus**, Teutonic goddess of fertility, 'Mother Earth.' Tacitus describes her cult, the centre of which has not been identified.

Hertling, Georg Friedrich, Count von (1843-1919), Ger. politician, b. Darmstadt. He ultimately became leader of the Catholic Centre in the Reichstag and succeeded Michels as chancellor in Nov. 1917. His time in office covered one of Germany's most successful periods in the First World War. He resigned Sept. 1918.

Hertogenbosch, see 's HERTOGENBOSCH.

Hertwig, Oskar (1849-1922), Ger. anatomist and embryologist; b. Friedberg in Hesse. Prof. of anatomy, Jena, 1878; at Berlin, 1888. In 1876 he pub. *Beiträge zur Kenntnis der Bildung, Befruchtung und Theilung des thierischen Eies*, which for the first time explained the mechanism of fertilisation. His other works include: *Die Zelle und die Gewebe*, 1893-8, and *Zeit- und Streitfragen der Biologie*, 1894-7.

Hertz, Heinrich Rudolf (1857-94), Ger. physicist, b. Hamburg. He was intended for the profession of engineering, but deserted it to study experimental and mathematical physics under Von Helmholtz in Berlin. For the best solution of

the problem of electric inertia he won the univ. prize, his paper, *Kinetic Energy of Electricity in Motion*, being pub. in 1880. In 1883 he was *privatdozent* (or univ. teacher not belonging to the professional staff) at Kiel, and from 1885 to 1889 prof. of physics in the Karlsruhe Polytechnic, where he made his remarkable experiments on electric waves based on Maxwell's theory of electricity and magnetism, for which the experimental verification had been lacking hitherto. The result of his experiments was to show that ordinary light consists of electro-magnetic waves. The apparatus which he invented for the purpose was an electric resonator which could select and make evident the oscillations of electric discharges which take place under certain conditions, as demonstrated by Kelvin. Having proved that these electric waves existed, he proceeded to show that they could be reflected, refracted, polarised, and diffracted just as light can, and he measured the velocity of propagation and found it to be of the same order as that of light and of radiant heat. These were the first experiments with radio-waves, and their importance in both physics and everyday life is considerable. His papers have been trans. into Eng. by Prof. D. E. Jones, and pub. as *Electric Waves*, 1893, *Miscellaneous Papers*, 1896, and *Principles of Mechanics*, 1899. See Sir O. Lodge, *Hertz and his Work*, 1895.

Hertz, Henrik (1798-1870), Dan. poet and playwright, b. of Jewish parents at Copenhagen. He studied law, but the literary instinct in him was too strong. He became a close friend of the dramatist Heiberg (q.v.). His *Amors Genistregjer*, 1830, a comedy in rhymed verse, was a complete novelty in Dan. literature, and his *Gengangerbreve* (Letters from a Ghost), pub. in the same year, is one of the best satires in Dan. His romantic national drama, *Scend Dyrings Hüs*, 1837, gained great success, while *Kong Rene's Datter*, 1845, has been trans. into almost every European language. His comedy, *Flyttedagen*, appeared in 1828, and his beautiful lyrics were collected in 1857-62. His *Dramatic Works* (18 vols.) were pub. 1854-73. See H. Kyrre, *H. Hertz, Liv og Digting*, 1916.

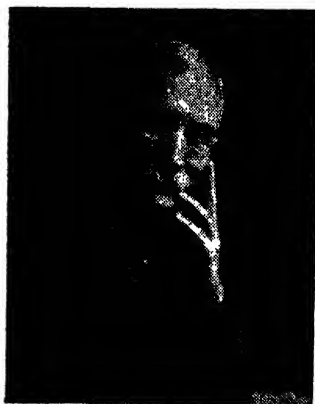
Hertz, Joseph Herman (1872-1946), Jewish chief rabbi; b. Rebrin in Czechoslovakia (then in Hungary); son of Simon H., Hebraist. Emigrated as a child to America. He was educ. at the College of the City of New York, Columbia Univ. (Ph.D.), and the Jewish Theological Seminary, New York. Rabbi of the Congregation Adath Jeshurun at Syracuse, New York, 1894-8. Then he became rabbi of Witwatersrand Old Heb. Congregation, Johannesburg, Transvaal. From 1906 to 1908 he was prof. of philosophy at the Transvaal Univ. College. Expelled by Boers as pro-Brit. during South African war; returned when Brit. were in occupation. In 1913 became chief rabbi for the Brit. Empire. In Zionism H. belonged to the *Mizrachi* or orthodox party; and he was president of

the Mizrachi Federation of Great Britain and Ireland. A consistent Zionist he was, however, never prominent in the movement, but as an Anglo-Jewish leader he was consulted by the Gov. when the Balfour Declaration (q.v.) was in preparation. Of his many writings which have proved of great benefit to Brit. Jewry may be singled out his commentaries on the Pentateuch (with portions from the Prophets) and on the Prayer Book, and his anthology for Jewish servicemen, *Book of Jewish Thoughts*.

Hertzen, see **HEIZEN**.

Hertzian Waves, see **ELECTROMAGNETIC WAVES**.

Hertzog, James Barry Munnik (1866-1942), South African general and statesman, b. Wellington, Cape Province, son of



Zadiks Studios

GENERAL HERTZOG

a farmer. Educ. at Victoria College, Stellenbosch, and at Amsterdam Univ. Became an advocate at Bloemfontein; judge of the Orange Free State, 1895. Commanded Boer forces of SW. div., South African war, 1899-1902, and, on behalf of the Free State, was one of the signatories of the treaty of Vereeniging, 1902. On the grant of responsible gov. to the 2 ex-reps. in 1906, he became the political leader of the Afrikaners in the Free State and was never reconciled to Brit. rule. As minister of justice in the first gov. of the Union of South Africa, his bitter speeches steadily fanned the embers of racialism, and he vehemently opposed all schemes of immigration and Brit. settlement. In 1912 Botha, who had pursued a policy of reconciliation with Britain, reconstructed his cabinet and omitted H. Henceforth it was an open feud—Botha and Smuts versus H.—and the Free State to a man supported H., who now launched the new National party there with secession from the Empire as its main plank. In 1914-18 he stood out against

co-operation with Britain, but, being convinced of the impracticability of rebellion, he tried to induce de Wet and Beyers to abstain from it. In the election of 1924 the Nationalist-Labour alliance defeated the rival combination led by Smuts, and H. became prime minister and minister of native affairs. But he now seemed to have abandoned secession, though he declared that the sole link between the Dominions and Great Britain was the personal bond of a common king—a declaration which he signed at the Imperial Conference of 1926. His chief concern in office was now to advance the controversial policy of 'segregation' of the natives, and to this period belongs the Nationalist determination to eliminate the Union Jack as the national flag of South Africa. In 1929 he was returned again with a small majority over all other parties and in 1930 attended the Imperial Conference of that year, declaring on his return that he had now 'done with a republic and republicanism.' He was again in London for the celebration of the silver jubilee of King George V. In 1933, as leader of the Nationalists, he joined forces with Gen. Smuts, leader of the South African party, to form a United party, and his utterances gave the impression that he would stand with the Empire in the event of war; but in 1939, when war broke out, H., as prime minister, declared for neutrality. He was, however, defeated on a vote of confidence and resigned in favour of Smuts. From that moment his career waned. He now, however, tried to justify Nazi policy and called on Smuts, in 1940, to withdraw from the war and make a separate peace. This aroused great anger in South Africa and in Nov. 1940 he resigned from the 're-united' Nationalist party a year after he had formed it with Dr Malan, the new Nationalist leader and an avowed republican, and then resigned his seat in Parliament. At a meeting of the Afrikaner party in Johannesburg in 1941 he stated that National Socialism was the only solution of South Africa's economic and political problems, but Havenga, leader of the Afrikaner party, opposed his view and there was an open break between the two men which finally ended his career. In spite of his later support of the Brit. Commonwealth and the favourable impression he made at the Imperial Conferences of 1926 and 1930 it was always obvious that his anti-Brit. sentiment was never far below the surface. See lives by L. E. Neame, 1930, and C. M. van der Heever, 1946.

Heruli, Tentic tribe, probably originating in Jutland; first mentioned in the 3rd cent., when they joined the Goths in ravaging the Aegean coasts. In the 5th cent. they helped Odoacer to destroy the W. Rom. empire. In the 6th cent. they formed an alliance with Theodoric the Ostrogoth against Clovis, king of the Franks, but were overthrown by the Lombards.

Hervieu, Paul Ernest (1857-1915), Fr. novelist and dramatist, b. Neuilly (Seine).

He was called to the Bar in 1877, and qualified for the diplomatic service. As a playwright he follows in the tradition of Dumas fils by his preoccupation with moral questions. His chief plays include; *Point de Lendemain*, 1890, *Les Paroles Restent* (Vaudeville), 1892, *Les Tenailles* (Comédie Française), 1895, *La Course du Flambeau*, 1901, *L'Énigme*, 1901, *Théâtre de Méricourt*, 1902, *Le Dédale*, 1903, *Le Réveil*, 1905, *Connais-toi*, 1909. He was elected to the Fr. Academy in 1900. See E. Estève, P. Hervieu, *conteur, moraliste et dramaturge*, 1917.

Herwarth von Bittenfeld, Karl Eberhard (1796-1884), Prussian general, b. Grosswerther in Thuringia. He entered the Guard Infantry in 1811, and served through the war of Liberation (1813-15), distinguishing himself at Lützen and Paris. In 1864 in the Schleswig-Holstein campaign he attained great fame through his daring capture of the Isle of Alsén. In 1866 he commanded the 'Army of the Elbe,' which overran Saxony and invaded Bohemia. He took a leading part in the brilliant victories over the Austrians at Hühnerwasser, Münchengrätz, and Königgrätz. On the outbreak of the Franco-Prussian war in 1870 he was appointed to organise the reserve forces in the Rhine prov. and in 1871 was promoted to the rank of field-marshal.

Herwegh, Georg (1817-75), Ger. lyr. poet, b. Stuttgart. Originally intended for the Church, he went to the univ. of Tübingen, from which he was expelled in 1836, and he then took up journalism. During his term of military service in Switzerland, where he pub. the book of political poems which, although confiscated, made him famous, *Gedichte eines Lebendigen*, 1841. He pub. a 2nd vol. of poems, which, like the first, was confiscated, and trans. Lamartine's works and sev. of Shakespeare's plays into German.

Herzegovina, see HERCEGOVINA.

Herzen (Russian Gertsen), **Aleksandr Ivanovich** (1812-70), Russian thinker and publicist, one of the founders of Populism (q.v.). From 1847 he lived in emigration, mostly in London, where he estab. the Free Russian Press and pub. *The Bell*, the first Russian émigré jour., which had considerable influence in Russia. A Liberal Socialist, H. rejected the idea that human beings could and should be sacrificed in the name of any abstract universal principles. See his *My Past and Thoughts*, 1924, and *From the Other Shore*, 1956; E. H. Carr, *The Romantic Exiles*, 1932; R. Hare, *Pioneers of Russian Social Thought*, Oxford, 1951.

Herzl, Theodor (1860-1904), founder of modern political Zionism (q.v.), b. Budapest. Most of his life was passed at Vienna, where in addition to his fame as a Jewish Nationalist, he also had a high reputation as a journalist and dramatist. His great ideal was to restore the Jewish nation to political autonomy. He treated the subject from an entirely secular standpoint, and did not at first bring Palestine into his calculations, though his ultimate

aim was to estab. the Jewish people as a nation in Palestine. He pub. his famous pamphlet, *Der Judenstaat*, in 1896, in which he set forth this ideal. See life by J. de Haas, 1927.

Herzog, Emil, see MAUROIS, ANDRÉ.
Herzog, Johann Jakob (1805-82), Protestant theologian, b. Basel. He was appointed prof. of theology at Halle, 1847, and of church hist. at Erlanger, 1854. His chief work was the *Realencyklopädie für protestantische Theologie und Kirche*, 1853-68 (22 vols.). In 1877 he began a 2nd ed. with G. L. Plitt, but the latter d. in 1880. Albert Hauck took his place, and after the death of H. pub. a 3rd ed., 1896-1909. His other works include *Johann Calvin*, 1843, *Leben Okolampads*, 1843, *Die romanischen Waldenser*, 1853, and *Abriß der gesamten Kirchengeschichte* (3 vols.), 1876-82, 2nd ed., 1890-2.

Heshan, see HESHBON.

Hesdin, Fr. tn in the dept of Pas-de-Calais, on the Canche. It has remains of the anc. fortifications and a 16th-cent. tn hall. Brass and leather goods are manufactured. The Abbé Prévost (q.v.) was b. here. Pop. 3100.

Heslrige, Sir Arthur, see HASELRIG.

Heseltine, Philip, see WARLOCK, PETER.

Heshbon (modern Heshban), chief city of Sihon, king of the Amorites, captured by the Israelites on their way to the Jordan (Num. xxi). Its site is on a plateau in the NE. corner of the Dead Sea, on a trib. of the Jordan in Trans-Jordania.

Hesiod (Gk Hesiodos) (8th cent. BC), earliest didactic poet of anc. Greece. He was b. at Asara, a vil. at the foot of Mt Helicon in Boeotia, the son of a shepherd. On the death of his father, he and his brother Perses had a law-suit over the patrimony, which the latter won by bribery; whereupon H. left his native place for Naupactus. His brother, who had wasted his substance, now applied to him for help. This incident is recorded in H.'s earliest poem, *Works and Days*, half of which contains good advice given to his erring brother, enforcing honest labour and laying down rules as to husbandry. The rest of the poem deals with lucky and unlucky days for rural work. The poem contains a beautiful description of winter and the earliest fable in Gk literature of which we have any knowledge, 'The Hawk and the Nightingale.' In this poem, too, H. relates how at some funeral games at Chalcis in Euboea he won in a contest of song a tripod, which he dedicated to the Muses. The other poem attributed to H. is *Theogony*. It is a hist. of the creation of the world—the earth, hell, ocean, night, sun and moon, and a hist. and genealogy of the gods, originating in Chaos and Eros. The authenticity of the poem was first doubted by Pausanias (AD 200); it is now generally accepted that it is the work of H., or of a disciple, and that it contains interpolations by a later hand. *The Shield of Hercules*, once thought to be H.'s, is probably a school-piece of the 7th cent. It is a description of the expedition of Hercules and Iolaus against Cyrenus, and obviously owes much

to Homer's description of the shield of Achilles. H.'s poetry is mainly didactic, and his moral sayings were enforced on all Gk children. See the critical ed. of C. Sittl, 1889. *The Works and Days* has been ed., with commentary, by T. A. Sinclair, 1932, and the *Theogony* by F. Jacoby, 1930. There is an Eng. trans. (with text) by H. G. Evelyn-White, 1926. See also A. R. Burn, *The World of Hesiod*, 1936.

Hesione, daughter of Laomedon, king of Troy, who exposed her to a sea-monster, following a yearly custom, to placate Apollo and Poseidon. Heracles rescued her from the rock to which she was chained and slew the monster, claiming, as his reward, the horses given to Laomedon by Zeus. Laomedon refused and was slain by Heracles, who took Troy and gave H. to Telamon.

Hespeler, vil. of Waterloo co., Ontario, Canada, 12 m. SE. of Berlin. It is served by the Canadian National Railway. It has woollen, flour, and saw mills, and manufs. furniture and implements. Pop. 3834.

Hesperia, see HESPERUS.

Hesperides, the mythical guardians of the golden apples which Earth gave to Hera on her marriage with Zeus. Their numbers and genealogy vary in different accounts, but they are usually 3 and the daughters of Hesperus. Hesiod places their garden far to the W. on the borders of the ocean, but Apollodorus near Mt Atlas. Heracles outwitted the H. with their fellow guardian, the dragon Ladon, and gathered the apples. See HERCULES. See also J. C. Lawson, *Modern Greek Folklore and Ancient Greek Religion*, 1910.

Hesperornis, genus of extinct birds belonging to the Odontognathae, and found in the Upper Cretaceous strata of Kansas; they were marine diving birds of considerable size, with rudimentary wings, and a broad tail of moderate length; the sternum is broad and unkeeled; the head small, with elongated jaws furnished with recurved teeth set in grooves.

Hesperus (Lat. *Vesper*), Gk name for Venus as the evening star. Although originally they were regarded as 2 distinct personalities, H. was very early identified with Phosphorus (Lat. *Lucifer*), the morning star. The Gk poets called Italy 'Hesperia,' and later writers extended the name to Spain.

Hess, Dame Myra (1890-), pianist, b. London, where she studied, mainly under Tobias Matthay and made her début in 1907. She made a great reputation in Europe and America, and during the Second World War instituted and ran the lunch-hr concerts at the National Gallery, almost the only chamber music to be heard in London during the period of the air-raids. D.B.E., 1941.

Hess, Rudolf (1896-), Ger. National Socialist politician, b. Alexandria, Egypt, his father being of Bavarian origin. He was educ. in Switzerland and at Godesberg. In the First World War he volunteered as a private in the 1st Bavarian

Infantry Regiment but later transferred to the air force, where he obtained a commission. After the First World War he happened to hear a passionate speech by Hitler in denunciation of the Versailles Treaty and became an ardent convert to National Socialism. He soon became the close friend and confidant of Hitler and accompanied him in the abortive 'putsch' in Munich (1923), sharing imprisonment with Hitler in Landsberg fortress. It was H. who inspired the production, though not the content, of *Mein Kampf*, and at Landsberg much of the work was dictated to him by Hitler. In 1928 Hitler made him his private secretary. In 1932 H., who had been appointed chairman of the Central Political Bureau of the Nazi party, was made deputy leader and, logically, heir apparent to Hitler. As such, he was consulted on most matters of foreign and domestic policy and possibly his advice had some restraining influence on his leader. In May 1941 H. flew alone to Scotland, landing near Glasgow, with proposals for a compromise peace with Britain, one of the most sensational events of the Second World War. His proposals were utterly discounted and rejected, and he was interned in Britain for the rest of the war. H. was found guilty of war crimes at the Nuremberg trial (1946), and sentenced to life imprisonment, his mental instability being obvious. See J. R. Rees (ed.), *The Case of Rudolph Hess*, 1947.

Hesse, Alice Maud Mary, Grand Duchess of, see ALICE MAUD MARY.

Hesse, Hermann (1877-), Ger. novelist, essayist, and poet, b. Calw in Württemberg. His father and grandfather were missionaries in India. Educ. at Maulbronn theological school and Cannstadt Gymnasium, from both of which he ran away, he became a mechanic and a bookseller and continued his education by much reading. He went to Switzerland, and in 1921 adopted Swiss nationality. He married, but left his wife and 3 children in 1911 to make a protracted tour in India. His early novels with their vivid portrayal of natural scenery and small-town life are reminiscent of Gottfried Keller, of whom he might seem to be the legitimate successor. These novels were remarkable for their musical prose and sympathetic portrayal of childhood which he revered as the only period of human life in which man can live a full life and 'find himself.' *Siddharta* is a novel containing many autobiographical hints. It describes a young man's revolt against the orthodox religious views of his father who is a missionary and his growing interest in Indian mysticism. *Der Steppenwolf* is a severe indictment of W. 20th-cent. urb. life with its lack of real culture. It is a highly controversial work, full of psychoanalytic imagery. H. believes, like Oswald Spengler, that the W. world is bound to go under unless it renews itself with fresh ideas from the East. He was awarded the Nobel Prize in 1946. His poetry, as musical as his prose, by turns sombre and idyllic, is also full of mystical

imagery and is a modern echo of Ger. romanticism of the great period. Above all he is the prophet of individualism. Prin. works—Novels: *Peter Camenzind*, 1904, *Unterm Rad*, 1905, *Gertrud*, 1910, *Rosshalde*, 1914, *Knulp*, 1915, *Demian*, 1919, *Siddharta*, 1923, *Der Steppenwolf*, 1927, *Narziss und Goldmund*, 1930, *Das Glasperlenspiel*, 1943; Poetry: *Gedichte*, 1922, 1928-37, *Trost der Nacht*, 1929, *Magister Ludi*, 1949; Essays: *Krieg und Frieden*, 1946. See H. Ball, *Hermann Hesse*, 1927; R. Schmid, *Hermann Hesse* 1928; E. Gnefkow, *H. Hesse*, 1952.

Hesse-Homburg, former landgraviate of Germany, composed of Bad Homburg (q.v.) on the r. b. of the Rhine, and Meisenheim on the l. b. The former dist. is now part of the Land of Hessen, and the latter of the Land of Rhineland-Palatinate (q.v.). H. was constituted a landgraviate in 1596 by Francis I, son of George I of Hesse-Darmstadt. It was incorporated with the latter duchy from 1806 to 1815, and again in 1866. Later it was part of Hesse-Nassau (q.v.).

Hesse-Kassel, or Electoral Hesse (Ger. Kurhessen), an electorate of Germany until 1866, later a dist. of Hesse-Nassau (q.v.), and now part of the Land of Hessen (q.v.). When Philip the Magnanimous, head of the League of Schmalkald (see SCHMALKALDEN), d. in 1567, he left half of Hessen, with Kassel (q.v.) as cap., to his eldest son, William IV, 'the Wise.' A large part of Schaumburg, as well as other ter., was added after the Thirty Years War (q.v.). In 1803, under Landgrave William IX, H. was constituted an electorate, the sovereign bearing the title of Electoral Prince of Hesse. In 1807, however, nearly all the ters. of H. were transferred to Westphalia (during the reconstruction of Germany by Napoleon I, q.v.) but they were recovered in 1813. In 1866, as the Elector Frederick William had supported Austria in the Austro-Prussian War (see PRUSSIA, History), a Prussian army entered his dominions and they were annexed to Prussia.

Hesse-Nassau, former prov. of Prussia (q.v.), situated between the Rhine and the Weser (qq.v.). It was formed in 1847-8 from the ters. of Nassau, Hesse-Homburg, Hesse-Kassel, and some small dists., including the ter. of Frankfurt-am-Main (qq.v.). It is now mainly incorporated in the Land of Hessen (q.v.).

Hesse-Rotenburg, former landgraviate of Germany, which was founded in 1627 by Ernest, the younger son of the Landgrave Maurice of Hesse-Kassel (q.v.). On his death in 1693 his 2 sons inherited it, but in 1700 they divided the ter. and founded the families of H.-R. and Hesse-Wanfried. The latter d. out, and the 2 parts were reunited in 1756. In 1801 part of the ter. was ceded to France, in 1813 some of the remainder to Prussia, and on the death of the Landgrave Victor Amadeus in 1834 what remained was re-united with Hesse-Kassel.

Hessen: 1. Name of a historic ter. of Germany. After 1806 the name was

principally to the Grand Duchy of Hesse-Darmstadt, which became part of the Ger. empire in 1871, a rep. in 1918, and then a state of the Ger. Reich. Various divs. of the anct landgraviate of H. resulted in the estab., before 1866, of sev. small states: Hesse-Kassel; Hesse-Homburg; Hesse-Rotenburg (qq.v.); Hesse-Rheinfels; and Hesse-Marburg. By the end of the Austro-Prussian War (see PRUSSIA, *History*) these small states had been incorporated either in Prussia (see

berg; on the W. by North Rhine-Westphalia and Rhineland-Palatinate; and on the E. by Bavaria and by the dists. of Suhl and Erfurt (qq.v.). It comprises the pre-1946 ter. of H. (see 1, above) on the r. b. of the Rhine, together with most of the former prov. of Hesse-Nassau. It is divided into 3 areas, 48 urb. and rural dists., and 2705 coms. There are 2 univs. (Marburg and Frankfurt-am-Main, qq.v.), and there is also a technical univ. at Darmstadt. The pop. is (1950)



HESSEN: ASSMANNSHAUSEN ON THE RIGHT BANK OF THE RHINE
Behind the town are vineyards, and the slopes of the Rheingau.

HESSE-NASSAU) or in the Grand Duchy of Hesse-Darmstadt. The ter. of H., in the years before the end of the Second World War, was divided into 2 parts: the main and S. part was situated on both banks of the Rhine (q.v.), and was bordered N. by Prussia, S. by Baden, E. by Bavaria, and W. by the Palatinate (qq.v.); the smaller and N. part (called Oberhessen) was an enclave in the ter. of Prussia. The total area was about 3000 sq. m. The cap. was Darmstadt, and the largest tn was Mainz (qq.v.). In 1946 the dist. on the l. b. of the Rhine became part of the Land of Rhineland-Palatinate (q.v.) and the remainder of the ter. became part of the new Land of H. (see 2, below).

2. Land of W. Germany, in the Federal Rep., bordered on the N. by North Rhine-Westphalia and Lower Saxony; on the S. by Baden-Württem-

64.1 per cent Protestant, and 32.2 per cent Rom. Catholic. The cap. is Wiesbaden, and other important tns are Frankfurt-am-Main, Darmstadt, Kassel, Fulda, and Giessen (qq.v.). Area 8150 sq. m.; pop. 4,544,000. The physical features of H. are extremely varied. In the SE. there are ridges of the Odenwald (q.v.) sloping down to the wide and fertile valley of the Rhine. The central plain of H., watered by the Main, is bounded on the W. by the Taunus Mts and the vineyard-covered slopes of the Rheingau (qq.v.). E. of the plain is the Vogelsberg (Taufstein, 2510 ft.). The hilly, wooded regions of the N. and W. are broken up by productive riv. valleys, principally those of the Fulda (see WESER) and the Lahn (q.v.) and their tribs. There are few lakes, but there are many mineral springs (Wiesbaden, Homburg, Ems, Nauheim, qq.v.). The prin.

crops are rye, oats, wheat, potatoes, barley, and sugar beet. Horses, cattle, sheep, goats, pigs, and poultry are raised. The chief industries are engineering, and the manuf. of chemicals, textiles, motor-vehicles, electrical equipment, and leather goods. Some good wine is produced. The mineral wealth is not great, but includes salt, lignite, iron, and some copper and manganese. For the hist. of the houses of H., see Hoffmeister, *Historisch-genealogisches Handbuch über alle Linien des Regentenhauses Hesse*, 1874; and Walther, *Literarische Handbuch für Geschichte und Landeskunde von Hesse*, 1821 and 1858.

Hessian-fly, or *Cecidomyia destructor*, name of a species of dipterous insects belonging to the family Cecidomyiidae; they are minute fragile flies, having very few wing nervures; the elongated antennae are furnished with rings of hairs. This fly does great injury to crops, and in some parts of the world causes considerable loss when it has once attacked cereals; the larva is lodged at a point in the stem of the wheat enveloped by a leaf; the stem consequently weakens and bends. When about to pupate, the larva of *C. destructor* exudes a substance from its skin and this forms a remarkable cocoon, which is called flax-seed.

Hessle, tn in the Haltemprice urb. dist. (q.v.) of the co. of Yorks, England, with an anct church and a shipbuilding industry. Pop. 12,000.

Hessonite, see CINNAMON STONE.

Hess's Law, in chem., states that the total absorption or evolution of heat in a given chemical reaction is uninfluenced by the number of stages in which the reaction is brought about. The law was first formulated in 1840 by the Russian chemist, G. H. Hess. See THERMOCHEMISTRY.

Hestia (the 'fire goddess'), identified with the Rom. Vesta (q.v.), daughter of Cronus and Rhea, one of the 12 chief deities of Greece. She was the goddess of the hearth and home, the personification of family life and of that social family, the state. As such her sanctuary was in the prytaneum, where the central fire of every city state was kept perpetually burning, and the magistrates, as fathers of the state, held their meetings. If accidentally extinguished, the sacred fire might be rekindled only by the sun's rays or by friction. Apollo and Poseidon both sought H.'s hand, but she took a vow of perpetual virginity, and Zeus made her the presiding deity over all sacrifices. Departing colonists took some of the sacred fire with them to be kindled on the hearth of their new colony. See T. Allen and E. Sikes (ed.), *Homeric Hymns*, xxix, 1904; L. Farnell, *Cults of the Greek States*, v, 1909.

Heston, residential suburb of London, at the N. edge of Hounslow Heath, Middx., which forms part of the municipal bor. (created 1932) of H. and Isleworth, and is also a parl. bor. returning 1 member. Pop. 105,000. See also HOUNSLOW; ISLEWORTH; OSTERLEY.

Hesychnasts (Gk for quietists, not to be

confused with the later Lat. heretics), the followers of a system of mystical prayer that originated early with the desert fathers, especially on Mt Sinai, and was adopted and developed on Mt Athos. The H. teach that by strict ascetic training in prayer (especially the Jesus Prayer, see EASTERN ORTHODOX CHURCH) under a qualified director, combined with perfect repose of body and will, the Christian can attain to the vision of the uncreated light which is the Divine Operation. This was distinguished from the Divine Essence, the latter never being visible in this world. For the distinction the H. appealed to Platonism, as their opponents, who were nearly all Latinisers, appealed to Aristotle and St Thomas Aquinas. A curious but subordinate feature of the system was the use of physical posture as a means to secure intense concentration, the body being held motionless for long periods, the chin pressed down to the chest and the eyes turned inward. This has a superficial likeness to E. disciplines, like that of Yoga. A furious controversy raged in the 14th cent., in which St Gregory Palamas, monk of Athos and later bishop of Thessalonica, defended the H., and Barlaam, an adventurous Gk ecclesiastic from Calabria, attacked them as ditheists. It was complicated by politics and by the E.-W. animosity. But in 1368 the 7th Synod of Constantinople canonised Palamas, and finally confirmed the orthodoxy of the H. See OMPHALOPSYCHOE; also I. Hausherr, 'Hesychna,' in *Orientalia Christiana Periodica*, 1956.

Hesychius, Gk grammarian of Alexandria of the 5th cent. AD. His lexicon of Gk words and phrases, with explanations of customs, usages, etc., is of the utmost value, especially in regard to rare words used by writers such as Aeschylus. In the only MS., now in Venice, which survives, there are large interpolations by later Christian writers. H. based his work on that of Diogenianus. See the ed. by M. Schmidt, 1858-68.

Hesychius of Miletus, Gk chronicler of the 5th cent. AD. His hist. of the reign of Justin I and of Justinian is lost; of his universal hist. an extremely valuable fragment, giving the hist. of Byzantium (Constantinople) down to the reign of Constantine the Great, survives. His biographical dictionary remains in an epitome of Suidas.

Hetaerae, or **Hetairai**, name usually applied in anct Greece to the best class of courtesan. The education of Gk women was almost entirely neglected, but the H. were among the most beautiful, accomplished, and intellectual of Gk women. They were nearly all trained to play the cithara or the flute, and to dance; Lasthenia studied philosophy under Plato, Leontion was a pupil of Epicurus, while Aspasia, the mistress of Pericles, and perhaps the most famous of all the Gk courtesans, was one of the first advocates of women's rights to education and culture, and the friend of Socrates. Other famous H. were Phryne, the mistress and

model of Phidias, Laïs, Pythionice, and Theodote. Most of these lived in Athens; but Corinth was even more famous for the number, beauty, and refinement of its H. See P. van Limburg-Brouwer, *Histoire de la civilisation morale et religieuse des Grecs*, 1833-42; W. Plankl (ed.), *Heldren-Briefe* (Greek and German), 1925.

Heterocyclic Compounds, organic ring compounds with an atom or atoms of other elements as well as carbon in the ring. Examples are pyridine, quinoline, furan, thiophene, and penicillin (q.v.).

Heterodontus, typical genus of Heterodontidae, the bull-shark family, occurs in the Pacific and East Indies. *C. philippi* is known popularly as the Port Jackson shark.

Heterodyne, method used in wireless telegraphy for the reception of continuous wave-signals, by the production of beats between the incoming waves and the oscillations of the receiving set itself.

Heteropoda, name given to a section of gastropod molluscs. The members of this section are free-swimming and pelagic, their chief characteristics are a large-sized head with 2 tentacles, transparent shell and tissues, and small visceral sac. In most families the foot is divided into the propodium, or anterior part, the mesopodium, on which is a small sucker, and the metapodium, which is elongated and forms the caudal appendage. The H. contain many families, the most important being Atlantidae, Carinariidae, and Pterotracheidae.

Heteroptera, name given to a sub-order of Hemiptera (q.v.); its members differ from those of the Homoptera in that their wings, when in repose, roof over the abdomen; also the front wings have a hard basal part. They are divided into Gymnocerata, in which the antennae are conspicuous and easily moved, and Cryptocerata, in which the antennae are hidden under the head of each eye; the former series are terrestrial, and include the extensive and important family Pentatomidae; the latter are aquatic bugs, containing 6 families, which are widely distributed.

Heterotropic Substances, see ISOTROPY. **Hetman** (Russian *Ataman*), title of the commander-in-chief of the Polish Army when the king was not present. It was adopted by Russia as a title for the head of the Cossacks (q.v.), and was later held by the Tsarévitch. It was also used for the elected elder of the *Stanitsa* in Cossack administration. See COSSACKS.

Hetton-le-Hole, tn in the co. of, and 5 m. N.E. of the city of Durham, England. It is the centre of a coal-mining dist. Pop. 18,500.

Hettstedt, Ger. tn in the dist. of Halle, at the E. foot of the Harz Mts (q.v.), 24 m. NW. by W. of Halle (q.v.). It is a copper mining and smelting centre. Pop. 10,000.

Heuglin, Theodor von (1824-76), Ger. traveller in Africa, b. Hirschlanden, in Württemberg. Trained as a mining engineer, he became interested in scientific investigation. In 1850 he went to Egypt and learnt Arabic and then went to

Arabia Petraea. Two years later he went to Ethiopia with Dr Reitz, Austrian consul at Khartoum, and later became his successor. During his consulate he again went to Ethiopia and to Kordofan, bringing back a valuable collection of natural hist. specimens. His next expedition was to Somaliland, after which he went to Central Africa. In 1862 he joined the Tinné expedition, and in 1870 went to the polar regions.

Heulandite, named after H. Heuland, an Eng. mineralogist; a monoclinic, translucent mineral, of pearly lustre and white, red, grey, or brown colour. Occurs in coffin-shaped crystals in the vesicles of basalt, usually with other zeolites. Fine crystals also occur in the Campsie Hills, Stirling, the Kilpatrick Hills, Dumbarton, in Iceland, Faeroe Is., Vindhya Hills, and Nova Scotia. Composition: silica (58.9 per cent), alumina (15-17 per cent), lime (6-7 per cent), soda, etc.

Heule, tn in the prov. of W. Flanders, Belgium, 2 m. NW. of Courtrai, on an affluent of the R. Lys. There are manufs. of linen. Pop. 8600.

Heuss, Theodor (1884-), Ger. politician and writer, lectured at the Berlin High School of Politics, 1920-33. After the Second World War he became leader of the Free Democratic party in W. Germany, and became first president of the Federal Ger. Rep. in 1949.

Hevelius (Hevel, or Hewelcke), Johann (1611-87), Ger. astronomer, b. Danzig. After travelling in France and England he settled as a brewer in his native tn, and took a leading part in municipal affairs. Always interested in astronomy, in 1641 he built an observatory in his house and fitted it up with first-class instruments, including a tubeless telescope, 150 ft long, made by himself. In those days it was essential that the object glass should have a very long focal length in comparison with its aperture. Only in this way could chromatic aberration be avoided. He was the founder of lunar topography, the results of which he pub. in his *Selenographia*, 1647. He discovered 4 comets in 1652, 1661, 1672, and 1677. In Sept. 1679 his observatory was burnt down, but he recomputed many of his earlier calculations and prepared for pub. *Firmamentum Sobiescianum* which appeared after his death.

Hever Castle, see EDENBRIDGE.

Heverlee, tn in the prov. of Brabant Belgium, S. of Louvain, on the R. Dyle, engaged in agriculture and market-gardening. It has an old abbey and a beautiful castle. Pop. 13,800.

Hewes County, see EGER.

Hewart, Sir John Gordon Hewart, 1st Viscount and Baron, of Bury, Lancs (1870-1943), lawyer, b. Bury, eldest son of Giles H., of Bury. Educ. at Bury and Manchester Grammar Schools and at Univ. College, Oxford. He joined the staff of the *Manchester Guardian* and for sev. years was a regular reporter in the Press Gallery at Westminster and afterwards prin. leader-writer on the *Morning Leader*. He was called to the Bar in 1902,

having obtained a certificate of honour, and had a large practice in Manchester and Liverpool. His rapid rise was due not only to his mastery of the law but also to the scholarly exactness of his oratory and his imperturbability. The most famous case of his earlier days was the well-known libel action in 1909 of *Artemus Jones v. Hulton*. This case, a leading authority on the law of libel, greatly increased his reputation. In 1912 he became a K.C. and in 1913 he was elected Liberal M.P. for Leicester. Solicitor-general, 1916-19; attorney-general, 1921-2—generally considered one of the best, if not the best, of the law officers of modern times. In 1921 he was admitted to the Cabinet as a personal distinction. As attorney-general he was a member of the Irish Conference and one of the Brit. signatories of the Irish peace treaty. Had the way to the Woolsack been clear he would have been lord chancellor. In 1922, on the retirement of Lord Trevethin, he became lord chief justice and brought to that office much legal learning and scholarship. As a criminal judge he was successful, but at *nisi prius* he was apt to forget that he was not still an advocate. Yet though an impartial survey of his career must take note of this criticism, he remains a great judge, and for intellectual accomplishment he had probably never been equalled by any previous holder of his office. In 1929 he pub. a vol., *The New Despotism*, against the delegation to depts of the power of legislating by Order in Council, with the Rating and Valuation Act of 1925 as the starting point of his indictment. As lord chief justice he became a member of the committee estab. in 1924 to safeguard future transfers of the controlling shares in *The Times*. Knighted 1916; created Baron Hewart of Bury 1922.

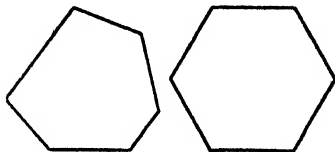
Hewins, William Albert Samuel (1865-1931), economist and politician; b. Wolverhampton; 2nd son of Samuel H. Educ. at Wolverhampton and Pembroke College, Oxford. He was prof. of economics at King's College, London, 1897; director of the London School of Economics, 1895-1903; and a member of the Senate of London Univ. till 1903, when the Tariff Reform movement of Joseph Chamberlain brought him prominently before the public as one of the chief economic supporters of the campaign and as secretary to the Tariff Reform Commission, 1903-17. He was Unionist member for Hereford 1912-18. His economic works include: *English Trade and Finance of the Seventeenth Century*, 1892, *Imperialism and its Probable Effect on the Commercial Policy of the United Kingdom*, 1901, *Trade in the Balance*, 1924, *Empire Restored*, 1927, *The Apologia of an Imperialist*, 1929, *The Royal Saints of Britain*, 1929.

Hewlett, Maurice Henry (1861-1923), novelist and poet, b. Weybridge, Surrey, son of a civil servant of Huguenot extraction. Educ. at the International College, Isleworth, he studied law and was called to the Bar in 1891 but never practised.

In 1897 he succeeded his father in the Land Record department of the Woods and Forests, but resigned 3 years later to devote himself to writing. His first book, *The Forest Lovers*, appeared in 1898. *Richard Yea-and-Nay*, 1900, and *The Queen's Quair*, 1904, are historical romances telling of Richard I and Mary Queen of Scots respectively; while stories of modern times are the trilogy *Halfway House*, 1908, *Open Country*, 1909, and *Rest Harrow*, 1910, together with *Bendish*, 1913, and *Mainwaring*, 1920. Of his dozen books of verse perhaps the best is *The Song of the Plow*, 1916. *Wiltshire Essays* appeared in 1921. His *Letters* were ed. by L. Binyon in 1926.

Hexachord, term used originally in Gk music for a diatonic series of 6 notes, or for the interval of a major sixth. It was also applied to an instrument having 6 strings. In mediæval music, it referred to a diatonic series of 6 notes containing 4 whole steps and 1 half step.

Hexagon (Gk *hex*, six, and *gōnia*, angle), in mathematics a figure containing 6 angles and bounded by 6 sides. If these are equal the figure is shown as a *regular* H. Hexagonal construction gives a body



the greatest possible amount of strength and stability, and is also economical in material. Bees' cells are hexagonal. Pascal's theorem of the H. states that if a H. be inscribed in a conic section the points of intersection of the pairs of sides (i.e. 1 and 4, 2 and 5, 3 and 6), produced lie on a straight line.

Hexahedron, see POLYHEDRON.

Hexahydroxycyclohexane, see INOSITE.

Hexameter (Gk *hex*, six; *metron*, measure), verse line of 6 ft. The term is usually reserved for the dactylic H. which is used in Gk and Lat. literature for epic poems such as the *Iliad*, *Odyssey*, and *Aeneid*. In this verse form the first 4 ft may be either dactyls or spondee, the fifth is usually a dactyl, and the last is either a spondee or a trochee. A typical H. is the opening line of Virgil's *Aeneid*: 'Armā vīrūmqūe cānō, Trōiāqūe priūmū āb ōris.'

Classical H.s are not very successful as a rule in Eng. because of the lack of natural spondee in that language, but attempts were made at H. verse in Elizabethan times, and later poems in a modified form of this metre are Longfellow's *Evangeline*, 1847, and Clough's *Bothe of Tober-na-Vuolich*, 1848.

A H. followed by a pentameter (line of 5 ft) constitutes what is known as the

elegiac couplet, a favourite metre with Ovid and other Lat. poets. It is illustrated by the lines of Coleridge:

'In the hexameter rises the fountain's
silvery column,
In the pentameter aye falling in
melody back.'

Hexamine, Hexamethylenetetramine ($(CH_2)_6N_4$), is a white solid obtained by the action of formaldehyde upon ammonia. It is used in medicine, under the name of H., or of urotropine, in certain diseases of the urinary organs.

Hexane, an important constituent of petrol, especially of the solvent called petroleum ether or ligroin. The formula is C_6H_{14} , and sev. isomeric compounds can exist, but only the normal H. is important. It is a colourless liquid, sp. gr. 0.6603 at 20°, insoluble in water. It can be made synthetically by heating propyl iodide with sodium. In its chemical behaviour it closely resembles heptane (q.v.).

Hexapla, ed. of the O.T. in parallel columns prepared c. AD 240 by the famous Alexandrian scholar, Origen. It consisted of the Hebrew, a transliteration of the Hebrew in Gk characters, an amended Septuagint version, and 3 other versions by the scholars Aquila, Symmachus, and Theodotion. The work was too huge for complete copying (about 12,000 pages), and it has survived only in a few fragments (ed. by D. and F. Field in *Origenis Hexaplorum quae supersunt*) but these are invaluable to critics and students of the O.T. It contains, indeed, almost all that remains of the Gk versions other than the Septuagint.

Hexateuch (see also **PENTATEUCH**; **JOSHUA**; **BIBLE**), name that was fashionably given, under the influence of Wellhausen, to the first 6 books of the Bible to indicate that they formed, as was supposed, a literary unity, with a common authorship, and the use of similar sources. The theory is now widely discredited. Noth of Tübingen discarded it in 1938. It is true that the Book of Deuteronomy may (at the second revision that many detect in it) have been joined to the historical books, before finding its proper place with the other books of the Law of Moses; but the Book of Joshua, on the other hand, was never regarded by the Jews as one of the books of Moses, nor did it achieve canonicity at the same time as the Pentateuch. It was assigned to the Prophets, whereas the Pentateuch was assigned to Moses, and the Law. See J. Wellhausen, *Die Composition des Hexateuchs*, 1899.

Hexham, mrkt tn of Northumberland, England, situated on the S. bank of the Tyne, about 21 m. by rail W. of Newcastle. It is an old tn with narrow streets and a mrkt sq., and is famous for the anct abbey church of St Andrew, founded by Wilfrid, archbishop of York, in 673. The present building which stands over the Saxon crypt is a splendid specimen of Early Eng. work. It contains a fine perpendicular roodscreen of oak, and

many interesting tombs, particularly one carved Rom. slab. The moot hall and the manor office, 2 castellated towers of the 14th cent., are also of interest. At a short distance S. of the tn lies the battlefield where the Lancastrians suffered defeat in 1464, and near by are the remains of Dilston Castle, seat of the last earl of Derwentwater, who was beheaded in 1716. Pop. 9373.

Hexobarbitone, see **BARBITURATES**.

Hexoic Acid, see **CAPROIC ACID**.

Heyden, Jan van der (1637-1712), Dutch artist, b. Gorkum. He was apprenticed to a glass painter but became noted for his tn views, many of them parts of Amsterdam, where, as a rule, he lived. (His 'Street in Cologne' is in the National Gallery.) His pictures are characterised by their warm colouring and their breadth of treatment. One of his best pictures is a view of Amsterdam tn hall.

Heydrich, Reinhard (1904-42), Ger. administrator, b. Halle; he served in the Ger. Navy, and joined the Nazi party, 1932. Under Himmler's (q.v.) protection his career in the Nazi hierarchy was a swift one, and he soon became an Obergruppenführer of the S.S., with the rank of a general of police. As Ger. candidate for the chairmanship of the International Police Commission he used his position in the period immediately preceding the Second World War for the purpose of developing the Ger. espionage service abroad. After the Ger. conquest of Bohemia and Moravia he succeeded von Neurath as Reich protector in Czechoslovakia (1941), where the cruelty and bestiality of his regime was soon notorious. Ultimately he was assassinated in Prague early in 1942, hundreds of Czechs being murdered by the Ger. authorities in retaliation.

Heylin, or Heylyn Peter (1600-62), writer and cleric, b. Burford, Oxon. He graduated at Oxford and through the influence of Laud became chaplain to Charles I, 1630. He was deprived of all eccles. offices during the Commonwealth, but at the Restoration was made subdean of Westminster. His works number more than 50, chiefly theological and controversial. He belonged to the High Church party, and wrote *Ecclesia vindicata: or the Church of England Justified*, 1657. His *Ecclesia Restaurata: or the History of the Reformation*, 1660-1, was ed. by J. C. Robertson, 1849.

Heyn, Piet (1578-1629), Dutch admiral, b. Delfshaven. He was taken prisoner by the Spaniards, and afterwards gained victories over them in 1624 and in Brazil in 1626. In 1628 he was successful in capturing the Sp. fleet carrying silver valued at a considerable amount. He met his death in a fight against the pirates of Dunkirk.

Heyne, Christian Gottlob (1729-1812), Ger. classical scholar, b. Chemnitz in Upper Saxony. Although very poor, he was a student at Leipzig Univ., and in 1753 obtained a post in the Brühl Library, Dresden. His ed. of *Tibullus*,

which appeared in 1755, secured him the support of Ruhnken of Leyden, and although he suffered many vicissitudes during the Seven Years War, the latter was instrumental in obtaining for him, in 1763, an appointment as prof. of Göttingen. His other works include eds. of the *Enchiridion* of Epictetus; Virgil, 1767; Homer, Pindar, and Apollodorus, as well as many reviews of books. See life by A. H. Heeren, 1813.

Heyse, Paul (1830-1914), Ger. author; b. Berlin; son of a prof. of philology. In 1854 he was one of the authors invited by Maximilian of Bavaria to take up his abode in Munich. He excelled particularly as a writer of short stories, all of which are true pictures of life enhanced by humour, by judicious power of rendering detail, and by a graceful style. He wrote some novels, plays, and a number of poems. Among his works are: *Thekla*, 1858, a poem; *Die Kinder der Welt*, 1873; *Das Buch der Freundschaft*, 1883, a collection of stories; *Maria von Magdala*, 1899, and *Der Heilige*, 1902, both of which are dramas. His *Novellen* (3 vols.) were pub. in 1890. He was the first German to receive the Nobel prize for literature, in 1910. See G. Kemmerich, *Heyse als Romanschriftsteller*, 1928.

Heysham, see MORECAMBE.

Heyward, Du Bose (1885-1940), Amer. novelist, b. Charleston, South Carolina. He left school at an early age and worked at a variety of jobs. His first pubs. were books of verse, *Carolina Chansons*, 1922, and *Skylines and Horizons*, 1924. His first novel, *Porgy*, 1925, scored a striking success; a dramatic version which he wrote in collaboration with his wife won the Pulitzer prize in 1927, and was made into an opera by George Gershwin, with the title *Porgy and Bess*, 1935. Other novels are *Angel*, 1926, *Mamba's Daughters*, 1929, *The Half Pint Flask*, 1929, *Peter Ashley*, 1932, *Lost Morning*, 1936, and *Star Spangled Virgin*, 1939. All these have the primitive negroes for their subject. H. held honorary degrees of the univs. of North and South Carolina and was an honorary member of Phi Beta Kappa.

Heywood, John (c. 1497-c. 1580), poet and playwright, b. probably in London. He seems to have been introduced at court by Sir Thomas More, and to have been a favourite in the time of Henry VIII, Edward VI, and Mary, on account of his ready wit and skill in music. When Elizabeth ascended the throne, however, he retired to Malines. He is chiefly remembered as the writer of interludes, which differed from those of his predecessors in having real persons substituted for qualities personified, thus forming a link with the modern drama. He also excelled as a writer of epigrams. Among his works are: *A Mery Play between the Pardoner and the Frere, the Curate and Neybour Praitte*, 1533, *The Play of the Wether*, 1533, *The Four P's*, c. 1545, *Proverbs*, 1546, *Two Hundred Epigrams*, 1555, and *The Spider and the Flie*, 1556. See R. W. Bolwell, *The Life and Works of*

John Heywood, 1922; T. S. Graves, *On the Reputation of John Heywood*, 1923.

Heywood, Thomas (c. 1574-c. 1650), dramatist, b. Lincs. He is said to have been a student at Cambridge. In 1596 he had begun his career as a playwright, and in 1598 was an actor in the Lord Admiral's company. He was a prolific writer, for 17 years before his death he claims to have written about 200 plays. His dramas deal with ordinary domestic life and with adventure, and in addition to these his works comprise pageants, elegies, and poems. Among his writings are: *A Woman killed with Kindness*, 1603, *The Fair Maid of the West*, 1631, *The English Traveller*, 1633, and *The Wise Woman of Hogsden*, 1638, while among his other writings are: *Troia Britannica*, 1609, and *An Apology for Actors*, 1612. His dramatic works were ed. by R. H. Shepherd (6 vols.), 1874. See studies by P. Aronstein, 1913; A. M. Clark, 1922; O. Cromwell, 1928; also L. B. Wright, *Heywood and the Popularising of History*, 1928.

Heywood, bor. in the co. of Lancs, England, situated 8 m. NNE. of Manchester. It is engaged chiefly in the manuf. of cotton, boilers, machinery, and chem. It has also brass and iron foundries, and coal mines. Pop. 25,170.

Hezekiah ('Yaweh hath strengthened') (726-697 BC), king of Judah, son and successor of Ahaz, with whom he provides a favourable contrast (2 Kings xviii.-xx.). Young when he ascended the throne, he ruled at first under a regency. He was intimate with Isaiah, and it was to his influence that H.'s reforming zeal was due. But the reign is memorable for great deeds without, as well as for reform within. The Assyrian overlordship was rejected, and in the second of the two expeditions sent to reinstate it, Israel won a conspicuous success.

Hiawatha, legendary chief who fl. about 1450, belonging to a tribe of the North Amer. Indians. He is said to have formed the League of Six Nations, known as Iroquois, and to have been sent on earth to teach men the arts, agriculture, medicine, and navigation. He departed to the land of Ponemah (Hereafter) on the appearance of the white man. Longfellow's famous poem *The Song of Hiawatha* (begun 25 June 1854, finished 28 Mar. 1855, and pub. Nov. 1855) has long held its place as the classic of Algonquin legend. The scene of the poem is among the Ojibways on Lake Superior between the Pictured Rocks and the Grand Sable. Perhaps the best account of the legendary H. is that to be found in H. Schoolcraft's *Alpic Researches*, 1839, the author having married a half-breed wife. The Iroquois form of the H. tradition is to be found in the same author's *History, Condition and Prospects of the Indian Tribes of the United States*, 1851-7. In these we learn that H. was supposed to have been sent among the North Amer. Indians to clear their rivers, forests, and fishing grounds, and to teach them the arts of peace; and that he was variously known as Michabou, Chiabo, Manabozo, Tarenawagou, and H.

'Hibbert Journal,' 'a quarterly review of religion, theology and philosophy,' founded under the Hibbert Trust in 1902 and ed. for 45 years by L. P. Jacks. It seeks to encourage the free interplay of ideas and to keep the educ. man abreast of current trends while avoiding excessive technicality.

Hibbert Lectures are a course of lectures instituted by the trustees of a Jamaica merchant, Robert Hibbert (1770-1849), who left money for the founding of scholarships, particularly for Unitarians. Until the year 1878 the money was used solely for this purpose, but in that year the trustees decided to begin the lectures for the purpose of discussing, and if possible settling, doubtful points of religion, quite apart from any sect. The first series was given by Prof. Max Müller. *The Hibbert Journal* (q.v.), financed by the Trust, was founded in 1902.

Hibbing, vil. in Minnesota, U.S.A., in Mesabi Range 65 m. N.W. of Duluth. Iron mining is the chief industry. Pop. 16,300.

Hibernation (Lat. *hibernare*, to winter), term applied to the dormant condition of certain animals during the cold weather. The same process is to be seen in warm lats. in the summer, and is then called aestivation (q.v.), from the Lat. *aestas*, summer. The cause of the practice of H. is probably the failure of the food supply. Among the hibernating animals are the bat, the bear, the badger, the dormouse, the marmot, the hedgehog, many reptiles, and terrestrial molluscs. The animals take precautions against being exposed to the cold, and bury themselves in caves, hollow trees, under the snow, etc. The hedgehog and the squirrel, however, are uneasy sleepers and are often abroad during the winter. The animals which do not hibernate completely store up 'caches' of food in the summer for the winter months. All such are vegetarians, save the Arctic fox, which hoards up dead hares, ermines, lemmings, etc. Among the soundest sleepers are the so-called cold blooded creatures, snakes, toads, and frogs. The distinguishing features of H. from a physiological point of view are: (1) the lowering of the temp. of the body; (2) the cessation of respiration to a very great extent, as proved by the fact that hibernating animals can be in a poisonous atmosphere for a long time with no ill effects; (3) the cessation of all activities connected with alimentation and excretion.

Hibernia, see IRELAND.

Hibiscus, genus of Malvaceae, consisting of 150 tropical and sub-tropical species of herbs, shrubs, or trees. They abound in the hot parts of Asia, America, and Africa, while a few are to be found in Europe. *H. esculentus*, is the Gumbo or Okra, an ann. grown for its edible fruit; *H. moscheutos*, the Swamp Rose-mallow, and *H. militaris* are showy perennials; *H. rosa-sinensis*, a hothouse shrub, and *H. syriacus*, a hardy beautiful shrub.

Hicough, or Hiccup, abnormal form of respiration in which an inspiration is checked by the sudden closure of the glottis. The inspiration is due to a spas-

modic contraction of the diaphragm, and this may be caused by an abnormal stimulus of any part of the phrenic nerve; it is, therefore, usually an involuntary reflex following irritation of the mucous membrane of the stomach. The characteristic sound is caused by the passage of the inward current of air through the narrowed aperture and its sudden arrest on the closure of the glottis. Temporary attacks may usually be cured by a draught of cold water, but in certain complaints the accompanying H. may last for days.

Hichens, Robert Smythe (1864-1950), novelist and journalist, b. Speldhurst, Kent, eldest son of Canon F. H. Hichens. Educ. at Clifton College and at the London School of Journalism, he became a very popular novelist and successful playwright. His first novel, *The Green Carnation*, 1894, was a satire on the mannerisms of Oscar Wilde, then at the height of his fame. *The Garden of Allah*, 1904, sold about 800,000 copies and was dramatised. He subsequently pub. *The Call of the Blood*, 1906, *Bella Donna*, 1909, *The Dweller on the Threshold*, 1911, *The Way of Ambition*, 1913, *In the Wilderness*, 1917, *Mrs Marden*, 1919, *December Love*, 1923, *Doctor Aris*, 1929, *The Bracelet*, 1930, *My Desert Friend*, 1931, *The First Lady Brendon*, 1931, *The Paradise Case*, 1933, *The Afterglow*, 1935, *Secret Information*, 1938, *The Million*, 1940, *Incognito*, 1947, *Too Much Love of Living*, 1948, and an autobiography, *Yesterday*, 1947.

Hickes, George (1642-1715), divine and philologist, b. Newsham, near Thirsk, Yorks. He received many preferments at the beginning of his career, but at the Revolution, on refusing to take an oath of allegiance to William of Orange, was deprived of all his benefices. In 1694 he was consecrated suffragan bishop of Thetford by a nonjuring prelate. His fame rests on *Thesaurus Grammatico-Criticus et Archaeologicus Linguarum Veterum Septentrionalium*, 1705. See biographical notice in J. Nichols, *Literary Anecdotes*, 1812.

Hickman, Henry Hill (1800-30), physician, b. Broomfield, near Ludlow, Shropshire. Little is known of his early life. He was a medical student at Edinburgh and qualified M.R.C.S. at the age of 21. He practised at Ludlow but soon moved to Shifnal. He began to experiment on suspended animation and rendered animals unconscious, first by partial asphyxiation by the exclusion of air, and later by inhalation of carbon dioxide. He then amputated limbs without pain and with good surgical results. He was thus one of the first to demonstrate that the pain of surgical operations could be abolished by the inhalation of a gas. He explained his work in his *Letter on Suspended Animation*, 1824, which was, however, received with apathy. His experiments were designed to produce insensibility by controlled asphyxia, not by anaesthesia as we know it to-day, but a temporary and reversible suspension of life. In 1838 H. addressed a memorial to Charles X of

France; this was considered by the Fr. Academy, but although a commission was appointed to examine H.'s method, it does not appear to have done so. H. d. at the early age of 30. His *Letter* was reprinted in the *Hickman Centenary Volume*, 1930, and the Royal Society of Medicine has endowed a H. Medal for the encouragement of research in anaesthesia. See E. F. Cartwright, *The English Pioneers of Anaesthesia*, 1952.

Hickory, native tree of North America, belonging to the genus *Carya*. The word is contracted from the native Virginian pohickery. The husk which covers the shell of the H. nut separates with 4 valves, while the nut itself has 4, or even more, blunt angles. The male flowers are borne in catkins, and the leaves are pinnate with serrate margins. The tree is fine and graceful with beautiful leaves. The wood is very valuable for fuel purposes. See *CARYA*.

Hickory, tn of Catawba co., North Carolina, U.S.A., on the S. and the Carolina and NW. railroads. It manufs. textiles, cordage, flour, lumber, wagons, and foundry products. It is the seat of Lenoir-Rhyne College, 1891. Pop. 14,755.

Hicks, Sir (Edward) Seymour (1871-1949), actor-manager, b. St Helier, Jersey, son of an army officer. First appearance at Grand Theatre, Islington, 1887, in *In the Ranks*. Chief light comedian at the Gaiety Theatre from 1894. He married the actress Ellaline Terriss (b. 1872) in 1902. H. was author of numerous plays, including *Bluebell in Fairyland*, 1901, *The Catch of the Season*, 1904, and *The Man in Dress Clothes*, 1922. He was knighted in 1935. Pub. *Twenty-four Years of an Actor's Life*, 1910, *Between Ourselves*, 1930, *Acting: A Book for Amateurs*, 1931, and *The Vintage Years*, 1943.

Hicks, William (1830-83), Brit. soldier. He entered the army in 1849, and served with distinction through the Indian mutiny. He took part in the Abyssinian war (1867-8), and retired with the rank of colonel in 1880. In 1882 he entered the Khedive's army, in which he was known as H. Pasha. As chief of staff he drilled the army into good order, and drove the dervishes out of the country between Sennar and Khartoum. Although he objected that his troops were unfit to accomplish the task, he was despatched to recapture El Obeid, which had been taken by the Mahdi. At the battle of Kashg, Nov. 1883, between H. and the personally led forces of the Mahdi, the majority of his men were slaughtered, and H.'s head was cut off. See J. Colborne, *With Hicks Pasha in the Soudan*, 1884.

Hicks-Beach, Michael, see ST ALDWIN.

Hidalgo, state of central Mexico, bounded on the S. by Jalisco and Mexico, Querétaro on the W., San Luis Potosí on the N., and Vera Cruz and Puebla on the E. The N. and NE. part is mountainous and rugged, being traversed by spurs of the Sierra Madre range, while in the S. and W. the country is fertile. Mining is carried on to a large

extent, the silver and gold mines especially being world famous. Iron is worked at Encarnación and Apulco; other minerals mined are quicksilver, copper, lead, and zinc. The orange and sugar cane are cultivated, also the staple cereals. The cap. is Pachuca, a metallurgical centre. Area 8057 sq. m.; pop. 850,394.

Hidalgo (from Sp. *hijo de algo*, son of somebody), title formerly used of the Sp. lower nobility. They had the right to use the title *don*, but when constitutional gov. was instituted their special privileges were taken away.

Hidalgo del Parral, city of Chihuahua, North Mexico, situated about 120 m. SE. of the tn of Chihuahua. Altitude 6400 ft. In the vicinity are gold and silver mines. Pop. 24,250.

Hides, see LEATHER.

Hiempsal, name of 2 princes of Numidia: (1) son of Micipsa, was murdered (118 BC) by Jugurtha, to whom Micipsa had given a share in the kingdom; (2) probably grandson of Masinissa, and the ruler of Numidia after the Jugurthine wars. He was afterwards driven from his kingdom by the followers of Marius, but was restored by Pompey in 81 BC.

Hierapolis (i.e. 'the Holy City'): 1. Anct city of Phrygia, near the Maeander, and bp. of Epictetus. It was a centre of the worship of Cybele, and an early seat of Christianity (Colossians iv. 13). The name, however, seems to have been derived from hot springs and a cave which were sacred to Pluto.

2. An anct city of Syria (Gk *Bambyce*, Arabic *Mumbij*), on the high road from Antioch to Iraq. It was a seat of worship of Astarte, whose temple was ravaged by Crassus in 53 BC. At one time an important centre of the cotton and silk trade, its decay dates from the Mongol invasion. Romanus Diogenes captured it in 1068, and it was stormed by Saladin in 1175.

Hierarchy (Gk and Lat. *hierarchia*, from Gk *hieros*, sacred, and *archē*, rule), governing body of the Church, consisting of the patriarchs (popes, *papae*, i.e. fathers), archbishops, bishops, and lower orders of clergy.

Hieratic, see HIEROGLYPHIC AND HIERATIC WRITINGS.

Hieres, see HYERES.

Hierocles, name of sev. Greeks, the chief of whom are: 1. (fl. c. AD 430) A Neoplatonist writer of Alexandria. He studied under the Neoplatonist Plutarch at Athens, and for sev. years taught at Alexandria. He later removed to Constantinople, where his religious views caused such offence that he was cast into prison. His commentary on the *Cornuta Aurea* of Pythagoras was ed. in 1860 by F. W. Mullah (Eng. trans. by N. Rowe, 1906). Scholars are now agreed that the *Philopetos*, a collection of 260 witticisms formerly attributed to H., was compiled at a later date.

2. Stoic, contemporary of Epictetus, and author of *Elements of Ethics*, which was once attributed to the above. See C. Prächter, *Hierokles der Stoiker*, 1901.

3. (fl. c. AD 300) Proconsul of Bithynia and Alexandria, supposed to be the instigator of the persecutions of the Christians (303).

Hieroglyphic and Hieratic Writings. Hieroglyphic writing (Greek *hieroglyphiká grámmata*, from *hierós*, 'holy, sacred,' *gluphḗ*, 'carving,' *grámmata*, 'letters') was the term applied by the Greeks, as mentioned by Clement of Alexandria (c. AD 200) in *Strom.* v. 4, to the pictorial symbols carved on Egyptian obelisks, sarcophagi, temples, and other monuments, or drawn on paintings. This

of communication became too slow and cumbersome, and more or less figurative objects were chosen to express compendiously a whole train of ideas by their essential relationship with that whole, of which they formed a salient part, e.g. flying arrows to indicate a 'battle.' Thus pictography (q.v.) became ideography (q.v.), the representative signs being a more or less exact pictorial image of the object, including the metaphorical or analogical expression of the idea intended; e.g. the sun was represented by a circle, the moon by a crescent. The transition from



A PAGE OF THE GREAT HARRIS PAPYRUS

script constituted one of the most important systems of writing of the ancient world. The term is also applied, although improperly, to other symbolical systems of writing, like those used on Hittite (q.v.), Mayan (q.v.), and Aztec (q.v.) monuments. The secondary meaning of the term 'hieroglyphic,' for any 'unintelligible' characters or, in general, as denoting something mysterious or emblematic, is easily accounted for by the fact that the Egyptian hieroglyphics for centuries defied all attempts on the part of antiquarians and scholars to decipher them.

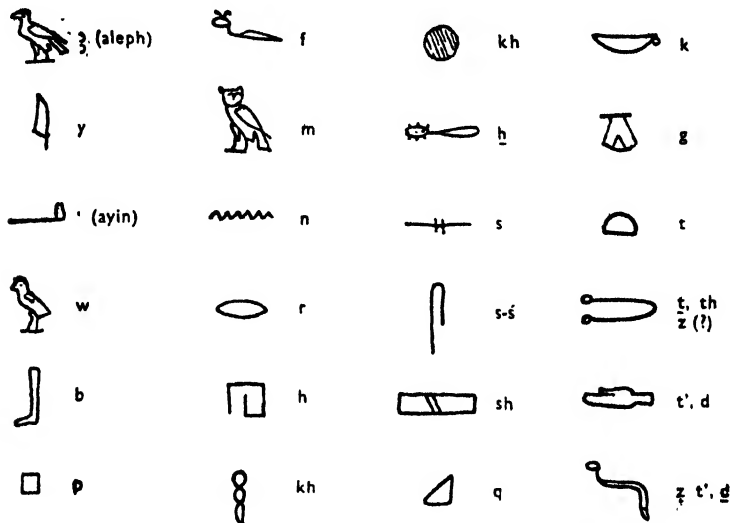
The origin and the early hist. of hieroglyphic writing are still uncertain. It is almost universally accepted that they were parallel in many respects with those of other so-called 'ideographic' systems of writing (see WRITING). According to this common theory, the Egyptian hieroglyphics started with crude pictures delineating objects such as 'flower,' 'sun,' 'horn,' 'eye.' Later, this method

figurative images to symbols representing also abstract ideas is a comparatively easy one, and it became clear that there may be no limit to eclectic ingenuity. For example, an eye with a sceptre beneath it denotes the king or kingly power; a hawk's head surmounted by a disc, the sun. Next came combinations of figurative imagery and symbols representing abstract ideas. Characters used in this way are generally called, although not quite correctly, 'ideographs'; they are, to be more exact, word-signs.

As soon, however, as the need of continuous discourse arose, it became evident that a number of the vital elements of speech, such as prepositions, inflexions, pronouns, or personal names, could not be represented by this means. Hence, the picture-symbols came also to be used to represent the phonetic values of words without any regard to their meaning as pictures, and the system became a kind of 'rebus-writing.' The range of expression of hieroglyphics was, therefore,

very wide. This was already recognised by a famous decipherer of the Egyptian hieroglyphics, Jean François Champollion (1790-1832), who concluded 'that there was no Egyptian writing altogether pictorial or representative, that the ancients did not employ a mode of writing altogether phonetic, that there is no regular writing altogether ideographic existing on any Egyptian monuments, and that the hieroglyphic mode of writing is a complex system—a system figurative,

the employment of hieroglyphic characters was threefold: (1) word-signs; (2) phonograms and phonetic complements; (3) determinatives. As to the phonograms, it must be pointed out that they usually consisted of the bare root of the words, but, as the Egyptian writing (like the Semitic alphabets) was purely consonantal, and there was practically no need for three-consonantal phonograms, generally speaking the phonograms were either bi-consonantal (numbering about



From 'The Alphabet, a Key to the History of Mankind' by Dr David Diringer.
Hutchinson & Co. (Publishers) Ltd.

EARLIEST HIEROGLYPHIC CONSONANTAL SIGNS

symbolical, and phonetic in the same text, in the same phrase, I would almost say in the same word.'

In order to remove ambiguities, there were introduced 'determinatives,' that is signs which defined the meaning of a word by denoting the class to which it belonged: 'mountains,' 'islands,' 'women,' 'to see,' 'gods,' 'negation,' and so forth. These determinatives were ideographs or pictorial images, placed after a phonetic word, but were not pronounced because, as mentioned, they only had the function of determining the exact meaning of the word they followed. For instance, the symbol representing 'a man with a long beard' was the determinative for 'gods,' 'august persons,' and 'kings'; 'a man with raised hands' determined 'adoration,' 'invocation,' and 'prayer'; 'the prone figure of a man' determined the ideas of 'death,' 'massacre,' 'enemies,' and so forth. Thus, in general,

75, of which some 50 were commonly used) or uni-consonantal, of which originally there were some 24, increased later by homophones to about 30, covering the whole range of Egyptian consonantal sounds. The Egyptians had thus a kind of alphabet. Actually it was not a true alphabet (q.v.), because in practice the Egyptians did not employ it when they could use word-signs or multi-consonantal phonograms, which they combined with the determinatives into a cumbersome and extremely complicated script, and maintained it for over three and a half thousand years, i.e. from c. 2900 BC to about the 6th cent. AD. to which the latest hieroglyphic inscriptions belong. Like the Mayan or Aztec scripts, but unlike the Chinese or cuneiform writings, the Egyptian hieroglyphics were highly pictographic, and maintained their pictorial character right to the end of the employment of this script. Moreover,

while the symbols of the Aztec script, for instance, were crude pictures, Egyptian hieroglyphs on the whole were artistic drawings. The direction of writing was normally from right to left; sometimes, however, from left to right; and sometimes inscriptions were written, for purposes of symmetry, in both directions. The signs face the beginning of the line. Some inscriptions are written vertically.

Hieratic (from Gk *hieratikós*, 'sacred, priestly') or 'priests' writing was a simple modification of the hieroglyphic system, differing from it only in the external form of the signs. At the time of Clement of Alexandria, from whom the word 'hieratic' is taken, this script was mainly employed by priests for writing and making copies on papyrus of Egyptian religious texts and literary compositions; and the term 'hieratic' was particularly suitable as opposed to the demotic writing (q.v.), which then was the script of everyday life. In earlier times, however, hieratic was the only Egyptian cursive script employed both for sacred and profane purposes, while the hieroglyphic writing was the Egyptian monumental script. The hieratic script was employed in one way or another from about 2800 BC to the 3rd cent. AD. The direction of writing, originally vertical, later became horizontal from right to left. A fine example of hieratic writing is to be seen in the Brit. Museum in the Great Harris Papyrus. A page of this papyrus is reproduced in the illustration on p. 470.

Demotic writing, see DEMOTIC WRITING.

Numbers.—The numbers 1 to 9 were expressed by short perpendicular strokes, as follows. 1 to 3, by one to three strokes; 4 by two above and two below; 5 by three above and two below; 6 by three above and three below; 7 by four above and three below; 8 by four above and four below; 9 by three groups of three strokes. 10 was represented by a sign having the form of a reversed U (\cap); 100 by a kind of spiral; 1000 by a sign representing the lotus flower; 10,000 by a kind of long, vertical, crooked stroke; 100,000 by a frog; 1,000,000 by a man with upraised arms; all the other numbers were represented by repeating the above signs.

Decipherment.—The attempted decipherments of the Egyptian scripts by the *savants* of the 16th to 18th cents. were unsuccessful, although Warburton conjectured the existence of the 'alphabetic' characters, de Guignes conjectured that some of the signs were determinatives, and the Dan. scholar G. Zoëga 'guessed' that sev. of the hieroglyphics must represent sounds, and actually used the term 'phonetic' in this context in his work on obelisks pub. at Rome in 1797; he also recognised that the oval rings known as *cartouches* contained royal names. At the beginning of the 19th cent., real progress was made by Swedish and Eng. scholars in decipherment of demotic and later of hieroglyphic writing. Dr Thomas Young, of Emmanuel College, Cambridge, pub. various discoveries in the Supplement to

the *Ency. Brit.*, 1819. His was the first real attempt to determine the 'syllable' or 'alphabetic' values represented by hieroglyphic signs, and his work was extremely important, because it gave one of the clues to Champollion's (see below) celebrated system of phonetic values as opposed to the then generally accepted theory that hieroglyphic and hieratic characters were not phonetic. He set himself the problem of determining what groups of demotic characters corresponded to certain Gk words, and his identification in the hieroglyphic script of sev. names of gods and persons also provided a basis for Champollion's decipherment. However, the Fr. scholar Jean François Champollion may be considered a real 'father' of modern decipherment; its key was provided by the celebrated Rosetta Stone (now in the Brit. Museum, B.M. 960, No. 24). It was discovered in 1799 by the Fr. captain M. Boussard, among the ruins of Fort St Julien, near the Rosetta branch of the Nile, during Napoleon's attempted conquest of Egypt. It was secured for Britain by Lord Hutchinson under the 16th article of the capitulation of Alexandria. The discovery of this monument of black basalt excited the liveliest interest among archaeologists, orientalists, and especially Egyptologists. The stone contains an inscription in 3 scripts: hieroglyphic (upper part, 14 lines), demotic (middle part, 32 lines), and Greek (lower part, 54 lines). The Rosetta Stone is a priestly decree drawn up in 197–196 BC in honour of Ptolemy V (205–181 BC). The fact that a large part of the hieroglyphic version is broken off, the beginning of the first 15 lines of the demotic version wanting, and the end of the Greek mutilated, rendered the key a very difficult one to apply. Starting from the known (the Gk version) and his knowledge of Coptic, and working upon the way paved by Young, Åkerblad, de Sacy, and others, Champollion slowly made the hieroglyphic and demotic writings yield up their secrets. He commenced by applying phonetic hieroglyphics to the reading of the Gk and Rom. proper names which occur on various monuments. His principle was this: he estab. that the Egyptians transcribed proper names and foreign words by means of a 'real alphabet', of which each symbol was equivalent to a single consonant. Extending his views, he applied his 'alphabet' to the reading of groups of hieroglyphics which represent common names, verbs, and other parts of speech, and ultimately estab. his theory that the characters or groups of characters which in the hieroglyphic texts express genders, numbers, persons, tenses, etc., are only the phonetic signs of single letters.

Champollion's masterly dissertation on hieroglyphic writing pub. in 1822, his *Lettre à M. Dacier* concerning *l'alphabet des hiéroglyphes phonétiques employés par les Égyptiens*, must be considered of paramount value for the hist. of decipherment, although for more accurate information on the subject reference should be made

to some elaborate modern treatises. Much scientific scepticism persisted until the results of Champollion's successful decipherment were confirmed by another important inscription known as the 'Decree of Canopus,' found in 1866 by the eminent Ger. Egyptologist R. Lepsius. The subsequent work of Eng., Ger., Fr., Amer., and other scholars resulted in the fact that at the present day much that is tolerably certain can be postulated of the language and the scripts of ancient Egypt, and an entire civilisation extending over three and a half millennia has been revealed. See also SYMBOLS.

The bibliography of the subject is enormous. Following are a few major studies of recent date, all of them containing rich bibliographies: The Brit. Museum *Guide to Egyptian Collections*, London, 1909; E. A. Wallis Budge, *Facsimiles of Egyptian Hieratic Papyri in the British Museum*, London, 1910, 1923; *Hieroglyphic Texts*, etc., in the *British Museum*, London, 1911-14; J. H. Breasted, *Ancient Records of Egypt*, Chicago, 1909; G. Moeller, *Hieratische Paläographie*, Leipzig, 1909-36; A. Erman, *Die Hieroglyphen*, Berlin and Leipzig, 1912; W. Spiegelberg, *Demotische Grammatik*, Heidelberg, 1925; E. Naville, *L'Écriture égyptienne*, Paris, 1926; A. H. Gardiner, *Egyptian Grammar*, Oxford, 1927; T. E. Peet, *Ancient Egypt* (in E. Eyre, *European Civilisation*, etc.), 1934; K. Sethe, *Das hieroglyphische Schriftsystem*, Glückstadt and Hamburg, 1935; E. A. Wallis Budge, *The Rosetta Stone*, 1935; J. A. Wilson, *The State of Egyptian Studies* ('The Haverford Symposium'), New Haven, 1938; W. F. Flinders Petrie, *The Making of Egypt*, Oxford, 1939; S. R. K. Glanville, *The Legacy of Egypt*, Oxford, 1942; G. Steindorff and K. C. Seele, *When Egypt Ruled the East*, Chicago; D. Düring, *The Alphabet*, etc., London, 1948, pp. 58-71; J. B. Pritchard (ed.), *Ancient Near Eastern Texts*, etc., 1950; D. Düring, *The Hand-produced Book*, 1953.

Hieron, or **Hiero I**, tyrant of Syracuse (478-467 BC), the successor of his brother Gelon (q.v.). He defeated the Etruscan fleet near Cumae (474). On 3 occasions he won the crown at the Olympic games, and was a patron of Pindar, Aeschylus, and Simonides, whom he entertained at his court.

Hieron, or **Hiero II**, tyrant of Syracuse (270-216 BC), a descendant of Gelon. After his victory over the Mamertines (270 BC) he was unanimously elected king by all the states of Sicily. In the first Punic war he sided with the Carthaginians, but in 263 became a friend and ally of Rome, to whom he remained faithful till his death.

Hieronymites ('Brethren of Goodwill,' 'Gregorians'), hermit order of Hieronymus (or St Jerome), founded in the 14th cent. by the amalgamation of sev. groups of hermits (papal approbation 1373).

originated in Italy, but fl. chiefly in Spain, where they were patronised by Charles V, Philip II, and their successors. A monastery of the Escorial, where the

kings of Spain were buried, was estab. for their use.

Hierro, or **Ferro**, one of the Canary Is., in the prov. of Santa Cruz de Tenerife (q.v.), occupying the most SW. position of the group. In the attempt to find a meridian circle which should intersect only seas which divide new world from old the Meridian of Ferro was fixed upon. But the Fr. found that the is. was 20° 30' W. of Paris, so reckoned the geographical zero as 20° W. Hence the 'Meridian of Ferro' is really about 30° E. of the is. The chief tn. of the is. is Valverde. Area 106 sq. in.; pop. about 10,000.

Higden, **Ranulf** (d. c. 1364), Eng. chronicler, was a monk of St Werburgh's monastery, Chester. His great work was a general hist. of the world from the Creation down to his own time, entitled *Polychronicon*. This was printed by Caxton in 1482. It is now ed., with trans. for the Rolls Series, 1865-86.

Higgins, **Edward John** (1864-1947), see SALVATION ARMY.

Higgins, **Henry Bourne** (1851-1929), Australian lawyer and statesman, b. Ireland, migrated to Australia, 1870. H. was a member of the legislative assembly of Victoria, 1894-1900, and member of the house of representatives for N. Melbourne, 1901-6. A Nationalist and a sincere Democrat, H., as delegate to the federation convention, 1897-8, was largely responsible for vesting arbitration powers in the commonwealth gov. He joined the Watson Gov. in 1904 as attorney-general. In 1906 he was made a judge of the high court of Australia, and in 1907 became the first president of the newly created arbitration court. His decision in the Harvester case, that a fair wage should meet the normal needs of an average employee in a civilised community, was to become the basic tenet of the Australian wage system. In 1920 he resigned as president of the arbitration court, though remaining a judge of the high court of Australia. He pub. *A New Province of Law and Order*, 1922. See N. Palmer, *Henry Bourne Higgins*, 1931.

Higginson, **Thomas Wentworth** (1823-1911), Amer. minister and author, b. Cambridge, Massachusetts. Graduating from Harvard (1841), he subsequently studied theology, and became pastor of a Unitarian church. He was an enthusiastic supporter of the anti-slavery agitation. During the Civil war he was captain of the 1st South Carolina Volunteers, a freed negro regiment. He wrote *Army Life in a Black Regiment*, 1870, lives of *Margaret Fuller Ossoli*, 1884, *Longfellow*, 1902, and *Whittier*, 1902, and *Part of a Man's Life*, 1905. *Cheerful Yesterdays*, 1898, is autobiographical.

High Church. This term is commonly and loosely attached to Anglo-Catholics (q.v.) or the followers of the Oxford Movement (q.v.) because of their 'high' doctrine of episcopacy and of the sacramental functions of the Church as compared with the Low Church party, or Evangelicals (q.v.). But, strictly speaking, the H. C. party of the Church of

England originated in the 17th cent. in opposition to the Puritans. The party, which was influenced by the teaching of Archbishop Laud, Bishop Andrewes, and George Herbert, stood for the necessity of episcopacy and the value of ordered and dignified worship.

High Commission, Court of, judicial court estab. by Queen Elizabeth in 1559. It was composed of clerical and lay commissioners nominated by the crown, and its function was to investigate eccles. cases. It attempted to extend its influence over cases which should have been dealt with in the common law courts, with the result that in the reign of James I Coke tried to check its power by his ruling that it could only fine and imprison in cases of heresy and schism. In 1641 the court, with its lay counterpart, the Star Chamber, was abolished by the Long Parliament. It was revived by James II in 1686, but finally abolished by the Bill of Rights (1689). A similar court existed in Scotland for 30 years (1608-38).

High Commissioner, a high administrative officer in a dependency or protectorate, or a dominion's chief representative in London. There was a Brit. H. C. for Iraq before that country became independent, and a H. C. headed the Brit. administration in the Malay States and the Federation of Malaya. In recent years H. C.s representing the U.K. Gov. have been appointed in the dominions of Canada, Australia, New Zealand, South Africa, and Ghana. They act as confidential channels of communication between the U.K. and dominion ministers.

High Court of Justice, see **APPEAL**; **CHANCERY**; **COMMON LAW**; **CRIMINAL APPEAL**; **COURT OF CRIMINAL LAW**; **JUDGE**; **JUDICATURE ACTS**; **PROBATE COURT**; **QUEEN'S BENCH DIVISION**; and **SUPREME COURT OF JUDICATURE**.

High Force, noted waterfall set in impressive scenery on the R. Tees, near Middleton-on-Tees, co. Durham, England, some 70 ft high.

High Peak, Derbyshire, England, is part of the Pennine Chain. Height 1980 ft. It is 16 m. SE. of Manchester, and contains the celebrated Castleton caverns. Also the name of a parl. div. See **PEAK**, **THE**.

High Places, hill sanctuaries used by the ant. Semitic peoples as being nearer heaven and so more favourable for prayer. The practice spread in Palestine among the Jews, and was with difficulty abolished under the influence of the prophets. The Mesopotamian Ziggurat was an artificial High Place.

High Point, tn in Guilford co., North Carolina, U.S.A., is 34 m. NE. of Salisbury. It has a thriving trade, and manufs. veneer, plywood, crates, excelsior, paperboard boxes, mirrors, paint, varnish, auto bodies, machinery, and tobacco. It has also large furniture factories, silk and cotton mills, carries on a large trade, and is a wholesale centre. It is served by 3 railways. Pop. 39,973.

High Priest, head of the Jewish priesthood. The true prominence of the H. P.

dates from the Exile, after the return from which he becomes the head of a theocratic state. The regulations for the H. P. are given (see **HEXATEUCH**) in Leviticus with great detail, where his ancestry is traced from Aaron and his son Eleazar. The vestments of the H. P. were magnificent, and were worn in the exercise of his duties except on the Day of Atonement, when he alone, clad in white linen, entered the Holy of Holies to sprinkle the blood of sacrifice. See also **EPHOD**.

High River, tn of Alberta, Canada, on the Highwood R., 40 m. S. of Calgary, on a branch of the C.P.R. Dairy farming and ranching are the chief occupations. H. R. is close to the Turner Valley oil fields. Here is the famous 'E. P. Ranch', owned by the Duke of Windsor. Pop. 2050.

High School, term for secondary school in many Eng.-speaking countries, traditionally preparing pupils for further study at univs. or other institutions of higher learning. To-day, in consequence of changes in the structure of secondary education, this has to be variously modified according to the type and duration of the courses offered. In England many H. S.s were estab. in the late 19th and early 20th cents. which were classed under the 1944 Act as 'grammar' type schools. Many, and especially those for girls, retain the name H. S., e.g. those set up by the Girls' Public Day School Trust between 1875 and 1901. In some Commonwealth countries all secondary schools are called H. S.s. In Australia some H. S.s provide an academic course varying in length, from state to state, from 4 to 6 years, usually from the age of 12. Others provide commercial, technical, agric., or home science courses of 5 years' duration. Junior H. S.s are similarly differentiated: they are 3-year schools and their courses may be rather specialised. In Eng.-speaking Canada, all secondary schools are H. S.s; traditionally they were 4-year academic schools following an 8-year primary course. Now composite H. S.s in rural areas offer various courses. In some provs. 4-year junior H. S.s are followed by 2-year senior H. S.s, and 4-year (starting age 13) technical and vocational H. S.s are increasing in number. Changes in the Canadian pattern reflect those which have taken place in the U.S.A. Here there is practically no differentiation as between academic and vocational schools except at the senior H. S. level. The trend is towards a 6-year primary school followed by a 3-year junior H. S. and then a 3-year senior H. S. Students completing the senior H. S. programme satisfactorily can apply for entry to colleges or univs. In the larger, older cities the traditional pattern of an 8-year primary school followed by a 4-year H. S. is still followed, and about a quarter of the pupils are enrolled in undivided junior-senior H. S.s of 6 years' duration. The tendency throughout the world, therefore, is to extend the scope of the courses provided in the H. S. either

through the estab. of separate technical vocational H. S.s or through undifferentiated or comprehensive schools. In all countries the H. S. may be privately or publicly controlled and financed. Typically, the Amer. H. S. is under public and local control. In Australia this control is a function of the individual states, in the Union of South Africa of the prov. councils, while Canada's schools are administered through the prov. depts, though, especially at the primary level, there is considerable local control.

High Seas, term of international law, denoting the whole extent of sea which is not under the sovereignty of any state. Every country adjacent to the sea owns 'territorial waters' restricted to the area within 3 m. of its shores. The H. S. are free to all nations, subject to certain laws made for the common welfare.

High Sheriff, co. or city officer vested with wide judicial and executive authority. His duties are defined by the Sheriffs Act, 1887, and include attendance on judges during Assizes, the functions of returning officers during parl. elections, and the preparation of lists of jurors. City sheriffs are appointed annually on 9 Nov. See also SHERIFF.

High Steward of England, one of the Great Officers of State under the Eng. crown. The original duty of the H. S. seems to have been to place the dishes on the lord's table at solemn feasts. On the accession of Henry IV the office was merged in the Crown, and has since been created *pro hac vice*. The court of the H. S. formerly decided upon claims to do services at the coronation of the sovereign; but this duty is now performed by the Court of Claims newly appointed on each accession. A H. S. was also created to preside over the House of Lords on the trial of a peer. But after the trial and acquittal of Lord de Clifford in 1935 on a charge arising out of a motor accident it was suggested that this archaic mode of trial be abolished. Privilege of peerage in relation to criminal proceedings was abolished by the Criminal Justice Act, 1948. There is a H. S. attached to both univs. of Oxford and Cambridge, whose duty is to protect the rights of the univ. courts.

High Street (2718 ft), mt in Westmorland, England, overlooking Haweswater (q.v.), which takes its name from the Rom. road which once ran from a camp at the head of Windermere (Rom. *Galaro*), crossing H. S. to reach Brougham (Rom. *Brocamum*) near Penrith.

High Treason, see TREASON.

High Willhays, hill of Devon, England, the highest point on Dartmoor (2039 ft). It lies 4 m. SW. of Okehampton.

High Wycombe, see WYCOMBE.

Higham Ferrers, tn of Northampton, England, situated 5 m. W. of Weltonborough. Boots and shoes are manufactured. Pop. 3648.

Highbridge, tn and part of urb. dist. of Burnham-on-Sea (q.v.), Somerset, England.

Highgate (the name derives from a toll

gate, no longer existing, erected in the 14th cent. on high ground), suburb of London, in the co. of Middx. It forms the W. part of the bor. of Hornsey (q.v.), but part of it lies in the London bor. of St Pancras (q.v.). The old vil. was developed by the houses of wealthy London citizens in the 16th and 17th cents. Bacon and Coleridge d. at H. Karl Marx, Faraday, and George Eliot are buried in H. cemetery. Whittington's stone, at the foot of H. Hill, is said to indicate the place at which he turned again after hearing Bow bells. The pop. is included in that of Hornsey (q.v.).

Highland Cattle, see CATTLE.

Highland Dress. Recent researches seem to point conclusively to the fact that the earliest form of H. D. resembled early Irish dress and not H. D. as we know it to-day. That is to say it consisted of a linen shirt, often dyed yellow with saffron dye, a mantle of thick wool, and variously long tight-fitting hose, short hose, or no hose at all. The hose, or 'trews,' seem often to have been checkered in design, and to have been made of cloth, probably cut on the bias. There are early references to mixed or varied colours, but these cannot, until the middle of the 16th cent. at the earliest, be interpreted as meaning 'tartan' (q.v.) in the modern sense. One 16th-cent. writer said, in fact, that bright colours had been given up in favour of the more inconspicuous heather colours. A number of descriptions and illustrations mostly by foreign visitors have survived from the 16th cent., and from them it seems clear that the usual H. D. at that period consisted of a shirt, usually saffron, hose or bare legs, and something corresponding to a plaid. From this period emerges the custom of wearing a 'belted plaid' (the *feilebreacan*), that is to say a long piece of woollen cloth, varying between 4 and 6 yds in length, half of which was pleated across its width and held round the waist to form a knee-length skirt, while the other half was wrapped round the upper part of the body. This plaid seems often, from this time, to have been made of striped or checkered cloth.

In the 17th cent. 2 lengths of stuff began to be worn, and the pleated kilt and the enveloping plaid became 2 separate garments. Paintings of highland noblemen of the 17th cent. show them wearing H. D. almost as we know it to-day, though the kilt was not then so fully pleated; and not only do the tartans not correspond to those worn to-day, but not infrequently 2 or 3 designs were worn at the same time by the same person. At this period the sporran (*spleuchan*), a goat-skin purse which hung from the belt over the kilt in front, can be found, and a jewelled pin to hold the plaid, as well as ornamental silver handles to daggers and pistols. The cap, or 'bonnet,' which has remained a part of H. D., derives from the early 16th-cent. flat cap fashionable all over Europe. H. D. is the only regional dress that has survived in the Brit. Is. It is still worn, not only by Highland

Maintenance of highways.—Important changes in the law of H.s, particularly in relation to the responsibility for maintenance and improvement, were made by the Local Gov. Act, 1929; but these changes do not extend to the administrative co. of London. Under this Act roads are divided into 'county roads' and 'ordinary highways,' and into 'classified' and 'unclassified' roads, and these distinctions are made for the purpose of fixing the responsibility for maintenance. An 'ordinary' H. may become a co. road by an order of the co. council, or by an order of the minister of transport made on appeal by a dist. council from the co. council's refusal or failure to make an order. Briefly, all H.s in rural dists. and main or classified roads in urb. dists. are co. roads; and neither the maintenance and repair of a co. road by an urb. dist. council nor the delegation of functions in respect of a co. road to a dist. council will result in the road ceasing to be a co. road. A road in the Act of 1929 means a road classified by the minister of transport for the purpose of the Act. Since 1936, however, there has been introduced a third category of H.—the 'trunk roads.' By the Trunk Roads Act, 1936, the minister of transport became the authority for 'the principal roads in Great Britain which constitute the national system of routes for through traffic.' But no road within the co. of London or within any co. bor. is included in the category of trunk roads. The roads which became trunk roads are listed in the first schedule to the Act; the total mileage of trunk roads in Great Britain is now 4500, and the minister of transport is responsible for their maintenance and improvement. The minister may, however, by agreement with any co. council or co. bor. council or urb. dist. council, delegate to these councils all or any of his functions with respect to the maintenance and repair and improvement of any trunk road; but such functions may not be delegated to a bor. or urb. dist. council with respect to any road outside the bor. or dist.; nor, except with the consent of the co. council in which the road is situated, may the minister's functions be delegated to the co. council with respect to any road outside the co. Even where there is delegation, the council merely acts as agent for the minister and in accordance with prescribed conditions, particularly in relation to securing ministerial approval for works expenditure. It is for the co. council or other appropriate local authority to exercise the statutory functions, in relation to trunk roads, prescribed by the Restriction of Ribbon Development Act, 1935, unless they have relinquished those functions in the manner provided by the Local Gov. Act, 1929 (section 32).

To the minister of transport the Act of 1929 transferred all powers and duties of any gov. dept in relation to (*inter alia*) roads, bridges, ferries, vehicles and traffic thereon, with certain exceptions; but the Board of Trade retains all its powers and duties under any local, special, or private Act, and the minister of health

retains all his powers and duties in regard to sanctioning loans by local authorities, under the Housing Acts, and in respect of the confirmation of by-laws. But the minister of transport has succeeded to the powers of the Road Board under the Development and Road Improvement Funds Act, 1919. By the Local Gov. Act, 1929, the rural dist. councils have ceased to be the H. authorities, and the co. councils have taken their place; but the rural dist. council retains 'functions,' which include powers and duties under the Local Gov. Act, 1894, as to rights of way, and encroachments on roadside wastes. The rural dist. council may also have certain functions of the co. council delegated to them as to maintenance and repair. The words 'county council' in the Act of 1929 do not include co. bor., and for ordinary H.s within a bor. the bor. council is the H. authority. Where an urb. dist. has a pop. of more than 20,000 the dist. council may claim to exercise the functions of maintenance and repair of any co. road, not including bridges, within their dist. The dist. council may act as agents of the co. council. The co. council may themselves place a road in repair or notify the dist. council to do so within a reasonable time, and such notice may be given whenever the co. council are satisfied on the report of their surveyor that repair is required.

Road safety.—As road safety largely depends on the activities of motorists, the prin. provisions of the Road Traffic Acts specifically relating to them are discussed under MOTOR LAW. The Ministry of Transport and Civil Aviation has compiled a H. code which is intended as a guide to all road users and is periodically revised. It is issued with driving licences, and copies may be obtained from H.M. Stationery Office. Non-observance of the code is not an offence, although it may be relevant in establishing the liability of a party to any legal proceedings. The minister has statutory authority to establish road crossings for pedestrians and to make regulations as to the precedence of vehicles and pedestrians, traffic movement, and the erection of traffic signs. Pedestrians who disobey the traffic directions of a uniformed constable on point duty are liable to a maximum fine of £10 (£25 for subsequent offences). The Road Traffic Act, 1956, empowers local authorities to designate roads on which dogs (unless driving cattle or sheep or under proper control for sporting purposes) must be held on leads. Local authorities are empowered by section 5 of this Act to provide road safety information and practical training for all classes of road users. The Act also extends to pedal cyclists sections of the Road Traffic Acts, 1930-4, which deal with the offences of dangerous and careless driving, driving under the influence of drink or drugs, and a driver's refusal to comply with a constable's request to supply his name and address. The minister may make regulations prescribing the construction, shape, and quality of

safety helmets worn by motor-cyclists. Under the 1930 Act it is permissible to carry a single passenger only pillion on a motor cycle provided that he sits astride a proper seat securely fixed to the machine behind the driver.

Road Transport Lighting.—The Road Transport Lighting Acts, 1927-53, prescribe the standards of lighting of all vehicles on any road during the 'hours of darkness' (i.e. between half an hr after sunset and half an hr before sunrise). The type of lighting required varies according to the class of vehicle. The general principle is that vehicles should carry in the front lamps showing white light, and rear red lights and reflectors.

See also ROAD SAFETY; ROADS.

See *The Complete Statutes of England*, or *Halsbury's Statutes of England*, 2nd ed. 1949 ff.; S. and Beatrice Webb, *The Story of the King's Highway*, 1920; W. J. Haddfield, *Highways and their Maintenance*, 1934; G. Bounphrey, *British Roads*, 1942; C. W. Scott Giles, *The Road Goes On*, 1946; R. Jeffreys, *The King's Highway, 1888-1948*, 1949; Madge Jenison, *Roads*, 1949; Pratt and Mackenzie, *Law of Highways*, 19th ed. 1952; P. F. Carter-Ruck and I. R. Macknill, *The Cyclist and the Law*, 1953.

Highway Code, see HIGHWAY, Road Safety.

Highwaymen, mounted robbers who infested the high-roads of England during the 17th and 18th cents. Among most famous H. in hist. are: Dick Turpin (1705-1739), Swift Nick Levison (hanged at York, 1684), and Jack Sheppard (1702-24).

Hiluman (Russian Khiuma, Swedish Dagö), is. in the Moonsund Archipelago off the E. shore of the Baltic Sea, N. of Saaremaa Is., and belonging to Estonia. Area 367 sq. m.

Hilarion, St (c. 290-372), abbot, founder of the eremitical life in Palestine. He was b. at Tabatha, and while studying at Alexandria became converted to Christianity. About 306, through the influence of St Antony, he became a hermit, and lived in the deserts bordering on Egypt, founded sev. monasteries in Palestine, and finally d. in Cyprus. The chief authority for his life is St Jerome. Feast, 21 Oct.

Hilary, St, pope (461-8), b. in Sardinia. In 449 he was sent by Pope Leo the Great to the 'Robber Synod of Ephesus.' Two treatises attributed to him are usually incorporated the one with St Augustine's, the other with St Ambrose's, works. His feast is on 28 Feb. See also POPES, LIST OF THE.

Hilary of Arles, St (401-49), b. at a tn between Lorraine and Champagne, brought up in the monastery of Lérins. As bishop of Arles he deposed the bishop of Besançon (444), which brought him into conflict with Pope Leo I.

Hilary of Poitiers, St (c. 320-68), b. at Limonum (Poitiers), a pagan converted to Christianity by his own studies. In 352 he was sent to the Emperor Constantius by Pope Liberius on a special mission to uphold orthodoxy against the Arians at the council of Milan. He became bishop

in 353, but was banished to Phrygia by Constantius for his vehement controversies with the Arians. He visited many churches of Asia Minor, and ultimately returned to Poitiers undaunted. His feast is on 14 Jan. His most important work is *De Trinitate*.

See J. Cazenove, *St Hilary of Poitiers and St Martin of Tours*, 1883; *Select Works of Hilary* (trans. in *Nicene and Post-Nicene Fathers*), 1899; E. Leigh-Bennett, *Handbook of the Early Fathers*, 1920.

Hilda, or **Hild**, St (614-80), English abbess. She was related to the Northumbrian royal family, and for 22 years she was abbess of the double monastery for monks and nuns at Whitby (Streoneshalh), which she founded in 658. Caedmon lived in her care. Feast, 17 Nov.

Hildburghausen, Ger. tn in the dist. of Suhl, on the Werra, 12 m. S. of Suhl (q.v.). It was the cap. of the duchy of Saxe-H., 1683-1826. There is an 18th-cent. palace and a 16th-cent. Rathaus. Pop. 7000.

Hildebrand, see GREGORY VII.

Hildebrand, Adolf E. R. von (1847-1921), Ger. sculptor; b. Marburg, son of Bruno H., writer on economics. He studied at Nuremberg and Munich, and worked in Berlin. He studied in Rome, 1867-8; he exhibited a bronze statuette, 'Sleeping Shepherd Boy,' at the Vienna Exhibition, 1873. He lived in Florence, 1874-92, working chiefly at portrait sculpture, reigning princes being among his subjects. He designed fountains at Munich, Jena, Worms, and Strasburg.

Hildegard, St (1098-1179), visionary, seer, and prolific writer on mystical, medical, and political subjects, b. Böckelheim, Germany. She is called the Sibyl of the Rhine, and was abbess of the nunnery of Diessenberg, Lorraine, at which she was brought up. She founded the abbey of St Rupert, near Bingen. Her feast is on 17 Sept. See life by J. P. Schmelzels, 1879.

Hilden, Ger. tn in the Land of North Rhine-Westphalia (q.v.), 8 m. SE. of Düsseldorf (q.v.). It has manufs. of machinery and textiles. Pop. 24,000.

Hildesheim, Ger. tn in the Land of Lower Saxony (q.v.), on the Innerste (a trib. of the Weser, q.v.), 18 m. SE. by S. of Hanover. It became the seat of a bishopric in 822, and was one of the original members of the Hanseatic League (q.v.). It was badly damaged during the Second World War. There is a splendid cathedral (partly 11th cent.), with beautiful bronze doors and many medieval treasures, and there are sev. other ant. churches of note, and old houses. A unique collection of Rom. silver plate of the time of Augustus was found in the Galgenberg, E. of the tn, in 1868. Textiles, machinery, and glass are manufactured. Pop. 82,000.

Hill, Aaron (1685-1750), poet and dramatist, b. London. On leaving Westminster School he travelled in Turkey, on which he pub. *A Full and Just Account of the Present State of the Ottoman Empire*, 1709. His contributions to the drama include: *Elfrid or the Fair Inconstant*

Ger. homeland the tradition of forts with massive defences, timber-work reinforcements, and sometimes elaborately defended gateways with guard-rooms, the whole overlooked from a rampart-walk. Such H. are those of Maiden Castle, Dorset; Hollingbury, Sussex; and Yarnbury in Wilts. In almost every case the ramparts follow the natural line of the hilltop and are laid out to avoid areas of dead ground. Many have been excavated in recent years and much is known of the method of construction and the peoples who built them. In general it may be said that H. with a single ditch and bank date from the earlier period of the Early Iron Age, while the more elaborate defences are products of a later period, but many have been added to or rebuilt at various times in their hist. An outstanding example is Bredon Hill, Worcestershire, which was built about 50 BC by a tribe of metal workers, and refortified almost a cent. later with a great double gate, which excavation showed to have collapsed upon its attackers, crushing them to death. In Wessex, H. with great multiple banks and ditches were built or adapted from existing earlier forts by the Veneti immigrants whose main armament was the sling. In N. Wales and elsewhere, H. were occupied well into the time of the Rom. occupation, and in the SE. of Britain the hill-fort tribal caps. of the Belgae can sometimes be linked with the estab. of the Rom. settlement on lower land near by. There is no detailed study of H. as a whole; reference should be made to the standard text-books on archaeology, e.g. V. G. Childe, *Prehistoric Communities of the British Isles*, 1949 ed.; S. Pigott, *British Prehistory*, 1949. See EARTHWORKS; VITRIFIED FORTS.

Hill-towns, see HILL-FORTS.

Hill 60 and Hill 70. Hill 60 is situated just SE. of Ypres, Belgium, and during the First World War was concerned with all the operations towards the E. and S. of that place. Its elevation gave it command over a considerable expanse of country, and in April 1915 it was the scene of much hard fighting, victory ultimately resting with the Brit. Hill 70 is situated just N. of Lens and E. of Loos. In the 1915 battle of Loos it changed hands during the last week of Sept. Here, again, its height, though little, gave it command over a considerable area, which was particularly valuable from an artillery observation point of view.

Hillah, Hilla, or Hellah, tn and liwa (prov.), built of materials from the ruins of Babylon near by. It is on the Euphrates, 60 m. S. of Bagdad, Iraq. H. is a resting-place for pilgrims to Meshhed Ali and Meshhed-Russell. It manufs. cotton, silk, and woollen goods. Near H., in 1920, some 300 men of the Manchester Regiment were massacred by Arabs in the course of a rising against Brit. mandatory rule (see IRAQ). Pop. (liwa) 261,903; (tn) 30,000.

Hillary, Sir Edmund (1919-), New Zealand mountaineer. He climbed to the

summit of Everest with Tenzing Norgay (q.v.) on 29 May 1953, and was knighted thereafter. An apiarist by profession, he served as a navigator in the Royal New Zealand Air Force from 1944 to 1945. His expeditions are as follows: New Zealand Garhwal Expedition, 1951; Everest reconnaissance, 1951; Brit. Cho Oyu Expedition, 1952; Brit. Everest Expedition, 1953; New Zealand Barun Expedition, 1954. His book, *High Adventure*, 1955, is an account of his personal part in the Everest campaign of 1951-3.



Camera Press

SIR EDMUND HILLARY
at Katmandu, on the return from
Mount Everest

He was deputy leader of the Brit. Commonwealth Antarctic Expedition under Dr (later Sir) Vivian Fuchs (q.v.) which contributed to the researches carried on during the International Geophysical Year, 1957-8 (see GEOPHYSICAL YEAR, INTERNATIONAL). He was responsible for establishing depots between Scott Base and the South Pole and for guiding the Fuchs party from depot 700 to Scott Base (14 Oct. 1957-2 Mar. 1958). From depot 700 he made a dash to the South Pole, which he reached on 3 Jan. 1958.

Hillel, called *Hazaken* ('the Elder') and *Hababli* ('the Babylonian') (c. 70 BC-AD 10), Jewish rabbi, was a native of Babylon. He began to study law under Shemaiah and Abtalion in Jerusalem, and soon grew famous for his profound learning and humility. Being well-nigh penniless, his learning was only acquired by exceptional zeal and self-denial. The

school of H., founded by his disciples, played an important part in the codification of Jewish law.

Hiller, Ferdinand (1811-85), Ger. conductor and composer, b. Frankfurt-on-Main, played a Mozart concerto at the age of 10, and in 1827 was present at the death-bed of Beethoven. He visited Weimar, Vienna (with Hummel, his master), Paris (where he lived from 1828 to 1835), Italy, St Petersburg, and England, etc. From 1850 till his death, he was municipal conductor at Cologne, where, besides organising the Conservatoire, he composed, conducted, wrote, and taught. Among his wide circle of friends were Berlioz, Mendelssohn, Cherubini, the Schumanns, Spohr, Liszt, and Chopin. His numerous compositions include chamber, orchestral, and vocal music.

Hilliard, Nicholas (1537-1619), miniature-painter and goldsmith, painted Queen Elizabeth and Mary Queen of Scots, and for 12 years enjoyed the exclusive privilege of executing portraits of James I and other members of the royal family. Charles I counted among his art treasures a jewel of H.'s workmanship with an enamelled picture of the field of Bosworth, and the likenesses of 4 sovereigns. Though inspired by Holbein, he is distinct as a superb craftsman and artist. See J. Pope-Hennessy, *A Lecture on Nicholas Hilliard*, 1949.

Hillington, see RENEWABLES.

Hillboro, cap. of Hill co., Texas, U.S.A., 50 m. SSW. of Fort Worth. It is served by 3 railroads and also by the Texas Electric Interurban. It manufs. cotton, hosiery, leather, flour. Pop. 8400.

Hillborough: 1. Par. and mrkt tn, N. of co. Down, Ireland, 12 m. SSW. of Belfast. Its chief industry is linen manuf. H. castle is the official residence of His Excellency the Governor of Northern Ireland. Pop. 2000. Rural dist. 25,000.

2. Chief tn, on the coast of Carriacou, an is. N. of Grenada, Brit. West Indies.

Hilton, James (1900-54), novelist, b. Leigh, Lancs. Taken as a child to London, he was educ. at Ieys School and Christ's College, Cambridge. His novel *Catherine Herself* appeared while he was still an undergraduate. His famous story, *Goodbye, Mr Chips*, 1934, was written in 4 days and ran first as a serial in the *British Weekly*; it was dramatised and filmed, and was later followed by *To You, Mr Chips*, 1938. *Lost Horizon*, 1933, won the Hawthornden prize and added the word 'Shangri-la' to the Eng. language. Others of H.'s books are *Knight Without Armour*, 1933, *We Are Not Alone*, 1937, *Random Harvest*, 1941, *Nothing So Strange*, 1947, and *Time and Time Again*, 1953.

Hilton, John (1804-78), surgeon. He attended Guy's Hospital first as a student and afterwards as demonstrator of anatomy (1828), assistant-surgeon (1844), and surgeon (1849). As president of the Royal College of Surgeons, he gave

the Hunterian oration in 1867. 'Anatomical John,' as he was called, was joint-founder with Towne of the excellent museum of models at Guy's, and was the foremost anatomist of his day. His *Rest and Pain*, 1863, is a surgical classic (6th ed., 1950).

Hilton, William (1786-1839), painter. In 1820 he was elected to the Royal Academy. His 'Christ crowned with Thorns', 1823, is in the Tate Gallery. His other pictures include 'Rebecca and Abraham's Servant', 1829, and 'Edith finding the Body of Harold', 1834.

Hilversum, tn in the prov. of North Holland, Netherlands, 18 m. SE. of Amsterdam. It manufs. textiles and carpets. H. is a popular summer resort, and has a picturesque neighbourhood. The tn is known for its modern broadcasting studios. There is also an attractive new tn hall, whilst the old tn hall houses a regional museum. Pop. 94,350.

Himalaya Mountains, in Central Asia, most elevated highland system in the world. The word Himalaya is Sanskrit, and means, 'Abode of Snow,' the same Aryan root being preserved in the Gk *cheima*, snow, and the Lat. *hiems*, winter. The H. M. stretch 1400 m. from the 74th to the 96th meridian E. of Greenwich, from the great bend of the Indus to the great bend of the Brahmaputra, and, with a breadth varying from 80 to 220 m., form a broad, sweeping barrier between Tibet and the Indian peninsula. They belong structurally to the great plateau of Central Asia, of which they form the S. scarp. On the Indian side the slopes of the main ridge are precipitous right down to the marshy 'Tarai' or 'Tariyani'. This is a belt of grassy lands, about 12 m. wide, traversed by many sluggish streams, along whose banks are treacherous morasses covered with tall reeds; it fringes the Pakistan, Indian, and Nepal frontiers for almost 500 m. from W. to E. Towards Central Asia the fall of the H. M. is less abrupt. Broadly speaking, their direction W. of Mt Everest, the highest peak on the globe (29,002 ft), is NW. and SE., but from Everest to the boundaries of China the lie is E. then NE. It is a mistake to regard the H. M. as a single unbroken chain: they are rather a series of ridges roughly parallel, whose symmetry is confused by a multitude of subsidiary spurs.

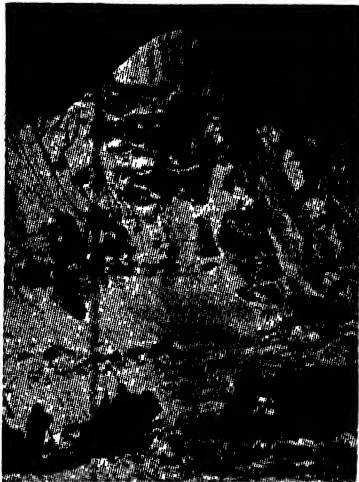
What is sometimes called the Indian watershed separates into 2 classes the rvs. which pass out to the Indian Ocean: those which out a direct way through the mts on to the plains of India, and those which after being gathered on the top of the tableland reach the sea by 2 streams which set out at distant points towards opposite limits of the chain. But the great divide, sometimes referred to as the Turkish watershed, is the ridge of the N. range, which is the natural cleavage line between the rvs. which disappear somewhere in the level stretches of Mongolia and Turkestan and those which eventually join the Indian Ocean. The Indian watershed is remarkable for its

height, which averages about 18,000 ft between the Brahmaputra and the Indus. The valleys traversing the highlands from the watershed to the Indian plains are gigantic gorges and offer small encouragement to human habitation. Some reach right up into the line of highest summits without rising higher than 3000 ft, and thus harbour tropical heat and vegetation at the foot of snow-capped heights. For the most part the valleys slope gradually till within 20 m. or so of the line of greatest elevation, and afterwards often

ft) in Garhwal. Before the highlands of this div. roll down to the plains, there rises a sandy, waterless ridge, known as the Bhabar, whose average elevation is some 4500 ft. This tract is densely forested and absorbs all the streams which flow down from the outer highlands; but as it undulates down to the Tarai the waters are collected together and once more reappear above the surface. The easternmost section covers Sikkim, Bhutan, and N. Assam. Its loftiest peak is Namcha Barwa (25,445 ft), the most easterly peak of the range at the great bend of the Brahmaputra, but 16,000 ft probably represents the mean altitude. There is still a wide field open to ambitious surveyors in this part of the mts, for the lower reaches of the Sanpo have never been traced, and little is known of the E. uplands.

There are naturally great variations of climate in the H. M. A comparison between ranges in the W. and E. shows that the latter enjoy a warmer but a wetter climate. The forest tracts are more widely dispersed in the E., and the area of lands under cultivation is probably less. The snow line is much higher on the Tibetan than on the Indian side, because the latter has the greater snowfall. On the S. exposures of the Himalaya there are perpetual snows to within some 15,500 ft of the sea-level, whilst at the top of the N. tableland of Tibet the snow line is actually as high as 20,000 ft. Precipitation is naturally greatest on the slopes of the outermost spurs, and by the time the limits of Tibet are reached, beyond the line of highest peaks, it is so small as almost to elude measurement. Rain falls between May and Oct., and the season is known as the SW. monsoon, which is accompanied by moisture-laden winds from the SW. As regards temp., both the ann. and diurnal range diminish with increase in elevation, whilst the variation of temp. according to altitude is greatest in summer. The rivs. hardly ever freeze, probably because they are too rapid. Glaciers descend much lower on the outer than on the Tibetan slopes. On the valleys of the latter they come down to within 15,000 ft of the sea-level, but on the S. faces 11,500 ft is a normal limit. In different parts Alpine, European, and tropical flora abound; the Sal, Toon, Sissoo, and Deodar supply the only timber of commercial value; cereals, fruit, and tea are grown with success up to a height of 7000 ft.

The H. M. afford the supreme illustration of the sublimity and incomparable grandeur of mt scenery. The reader has only to remember that the mean elevation is some 18,000 ft, and that 84 heights exceed 24,000 ft, to grant the truth of the assertion that 'the great mountain solitudes of the Himalayas, . . . the apparently endless succession of range after range, of ascent and descent, of valley and mountain top, of river, torrent, and brook, of precipitous rock and grassy slope, of forest and cultivated land, cannot fail to produce impressions of wonder



Frank Smythe

WEDGE PEAK

One of the peaks of the Kangchenjunga group which rises 8000 ft above the Kangchenjunga glacier

shoot upward from 5000 to 10,000 ft within a very small distance.

It is convenient to divide the H. into 3 sections. The W. begins from that point where the Indus turns southwards between Gilgit and Kashmir, a point which is marked by Nanga-Parbat (26,820 ft), and extends eastward to Tehri-Garhwal. This section confines the Indus and other rivs. for hundreds of m. before giving them an opening southward. The Central H. contain 8 of the 10 highest summits in the world, and comprise the regions of Hundes, Garhwal, Kumaon, and Nepal. (The highest group of mts in the world is in the Karakoram (q.v.), not in the H. M.) Other outstanding crests besides Everest are Kangchenjunga (28,146 ft, the third highest mt in the world), on the Sikkim frontier, Makalu (27,800 ft) in E. Nepal, Dhaulagiri (26,811 ft), Annapurna (26,493 ft) in W. Nepal, and Nanda Devi (25,645

and awe of such intensity as can be conjured up by no other range in any quarter of the globe.' (F. S. Smythe, *The Kangchenjunga Adventure*, 1930.) Numerous expeditions have been organised for exploring the peaks of the H., apart from those to Mt Everest (q.v.). Among the great peaks climbed since 1950 (prior to which no peak of 26,000 ft had been ascended) are Annapurna (26,493 ft), Nanga Parbat (26,620 ft), Cho Oyu (26,750 ft), Makalu (c. 27,800 ft), Kangchenjunga (28,146 ft), K2 (28,250 ft) in the Karakoram (q.v.), Everest (29,002 ft). Brit., Fr., Ger., Austrian, It., and Sherpa climbers shared in these ascents. See S. C. Burrard and H. H. Hayden, *Sketch of the Geography and Geology of the Himalayan Mountains*, 1907-8; W. Whistler, *In the High Himalayas*, 1924; A. Albers, *Himalayan Whispers*, 1926; F. S. Smythe, *The Kangchenjunga Adventure*, 1930, *Kamet Conquered*, 1932; F. Bechtold, *Nanga Parbat Adventure*, 1935; E. E. Shipton, *Nanda Devi*, 1936, *Blank on the Map*, 1938, *Upon that Mountain*, 1943; H. W. Tilman, *The Ascent of Nanda Devi*, 1937; Paul Bauer, *Himalayan Campaign*, 1937; Sir F. Younghusband, *Heart of a Continent*, 1937; A. Heim and A. Gansser, *Thron der Götter*, 1938; Tom Longstaff, *This My Voyage*, 1950; W. H. Murray, *The Scottish Himalayan Expedition*, 1951; M. Herzog, *Annapurna*, 1952; C. Houston and R. Bates, *K2—the Savage Mountain*, 1955; G. O. Dyhrenfurth, *To the Third Pole*, 1955; D. W. Fletcher, *The Children of Kangchenjunga*, 1955.

Himera, Gk city on the N. coast of Sicily, founded in 648 bc. In 408 bc it was destroyed by the Carthaginians, who built a new town, Thermae, on the opposite bank of the R. H.

Himmler, Heinrich (1900-45), Ger. Nazi leader, chief of the Gestapo, b. Munich of a middle-class Catholic family and educ. at the High School of Landshut, Bavaria. At 17 he joined a Bavarian infantry regiment as a cadet. Leaving the army in 1919 he studied at the Munich Technical College and, later, was employed at a nitrate works; then in 1928 he turned to poultry farming. He was an early member of the Nazi party of Strasser (see HITLER) and in 1929 Hitler appointed him leader of the S.S., which was then the Black Guard or Hitler's bodyguard. He began early to study systematically the records of the party chiefs and of their subordinates, and so accumulated a great mass of information about individuals which eventually gave the Gestapo (q.v.) so much power for blackmail. Hitler gave him a free hand in the development of the Black Guard as a strong, carefully selected, semi-military corps. When Hitler decided on the purge of 1934 (see HITLER), H. and his force were the instruments of assassination. Besides organising the Gestapo in Germany and beyond the frontiers, he estab. a Fifth Column (q.v.) wherever the opportunity offered. After the attempt on Hitler's life in 1944 (see HITLER) he was the open master of Germany. He took command

of the home army, suppressed the elements of revolt, and organised the levies of the Volksturm. When the final Russian offensive approached Berlin in 1945 he headed a section of the defences, and it was he who in the last days of the Reich cap. made overtures for capitulation. He typified the most extreme, pseudo-mystical element in the forces of Nazi revolution, and caused it to become the predominating force in Ger. politics. He organised a vast machine of political oppression, and instigated the mass murders in the concentration camps (q.v., and see also BUCHENWALD; BELSEN) of men and women—Germans, Russians, Poles, Czechs—for the sake of what he would have called 'posterity'—not for a Germany victorious in the war but for a Germany 'reborn' through the extermination of all who might stand in the way. With Hitler dead he made his clumsy move for capitulation, trying vainly to play off the W. Allies against Russia. He was captured, after the Ger. surrender, at Bremervörde, near Bremen, by the Brit., but in Lüneburg, while being medically examined before being handed over to the appropriate authorities as a war criminal, he succeeded in taking cyanide of potassium from a phial concealed in his mouth, dying almost at once.

Hims, see HOMS.

Hinckley, mkt tn of Leicestershire, England, 13 m. SW. of Leicester. It is an ant. tn on Watling Street, and was formerly a spa and health resort. Manufs. include hosiery and footwear, with dyeing, cardboard box making, printing, and hosiery machine engineering. Pop. 39,310.

Hincks, Sir Francis (1807-85), Canadian statesman and Brit. colonial governor, b. Cork, Ireland; youngest son of Thomas Dix H., LL.D., Presbyterian minister. H. emigrated in 1831, and opened a warehouse in Toronto. A Liberal, he estab. the *Eraminer*, 1838. He was elected to the first Parliament of Upper and Lower Canada in 1841; became joint premier with A. M. Morin, 1851-4, following on the 'great ministry' of Baldwin and Lafontaine. H. sought to secure a reciprocity treaty with the U.S.A. Involved in financing of Grand Trunk Railroad. He was governor of Barbados, 1855-62, and Brit. Guiana, 1862-9; created C.B., 1862; K.C.M.G., 1869. He then returned to Canada; he was minister of finance, 1869-73.

Hinemar (c. 806-82), prelate and controversialist, was educ. in the abbey of St Denis. He became abbot of Compiègne and of St Germain, and finally (845) archbishop of Rheims. He was the bitter opponent of Gottschalk (q.v.). As metropolitan, he excommunicated his suffragan, Rothad, but eventually reinstated him in obedience to the pope. Yet concerning the sovereignty of Lorraine he boldly withstood Pope Adrian's interference.

Hind, female of *Cervus elaphus*, the red-deer, a ruminant ungulate mammal

to the Cervidae; *hart* is the male.

H., Paul (1895-), Ger. composer, b. Hanau. Studied at the Frankfurt Conservatory, led the opera orchestra there in 1915-23, played viola in the Amar-Hindemith Quartet until 1929, and became prof. at the Berlin High School for Music in 1927. The Nazi rule, which objected to his music as decadent, drove him from Germany, and after living in various countries he settled in the U.S.A. in 1939, becoming head of the Music Dept at Yale Univ. in 1942. As a composer he is of great importance to Ger. music. He is a believer in practical music-making by amateurs, and much of his work is what he calls *Gebrauchsmusik* (utility music), and he gradually evolved a theory of his own which makes composition depend on tensions of various intensity between intervals and keys. His output is enormous and includes operas (the latest being *Mathis der Maler* and *Harmonie der Welt*), ballets, choral works (oratorio *Das Unaufhörliche*), orchestral concertos and symphonies, solo concertos, a vast amount of chamber music, piano works (including *Lulus Tonalis*) and songs (*Das Marienleben*, words by Rilke).

Hindenburg, see ZABRZE.

Hindenburg, Paul Ludwig Hans von Beneckendorff und von (1847-1934), Ger. soldier and president of the Ger. Rep., b. Posen. He came of a family of soldiers. In 1859 he entered the Cadets' Academy at Wahlstatt and in 1865 became a 2nd-lieut. in the 3rd Regiment of Foot Guards. His first campaign was the Austro-Prussian of 1866, in which he was wounded in the head. On the outbreak of the Franco-Ger. war of 1870-1 he was adjutant of the 1st battalion of his regiment. In 1873 he entered the Kriegsakademie, joined the general staff in 1878, and was promoted captain. He was posted to the H.Q. staff of the 2nd Army Corps at Stettin. In 1881 he was transferred to the 1st Div. at Königsberg, and in 1886 he came under the influence of the great Moltke. In 1889 H. transferred to the war ministry, and took over a section of the common war dept. Here he was engaged in drawing up field engineering regulations and details connected with heavy artillery. In 1893 he was appointed to command the 91st Infantry Regiment at Oldenburg. In 1896 he was appointed Chief of Staff to the 8th Army Corps at Koblenz, to the command of the 4th Army Corps in 1905, and retired from the service in 1911. On the outbreak of the First World War, he was not immediately recalled to active service, but the retreat of the Eighth Army in E. Prussia demanded a new commander, and H.'s acquaintance with E. Prussia marked him out for appointment in preference to Ludendorff. Soon afterwards he won the victory of Tannenberg (q.v.) over Samsonoff and, turning against the army of Rennenkampf at the first battle of the Masurian Lakes, routed that general too. He was then promoted

to be commander of the Eighth and Ninth Army Group which Falkenhayn was leading against the Russians in Poland. The Ninth Army reached Warsaw but the Eighth was forced to withdraw to the Masurian Lakes again, and it was only when he received the Tenth Army as reinforcements that H. again defeated the Russians at the Masurian Lakes. Already made a field marshal, his fame was now greater than that of von Mackensen, whose Austro-Ger. armies, in the middle of 1915, had driven the Russians out of both Galicia and Poland. In 1916, after the battle of the Somme, he was transferred to the W. Front, being given the



Topical Press
VON HINDENBURG

supreme command of the Ger. Field Army, with Gen. Ludendorff as his First Quartermaster Gen. He organised the retreat to the famous Hindenburg (or first Siegfried) Line, while abandoning the offensive against Verdun. But he won no other great victory and, on 11 Nov., led his armies into Germany, a defeated commander, but with his spirit unbroken and having to his credit the successful planning of a great retreat, followed by an orderly demobilisation. By no means a brilliant strategist, H. was a sound general and steadfast in purpose.

There seems little doubt that his victories were achieved largely with the advice of Gens. Ludendorff and Hoffmann. After the Armistice, he retired to Neudeck. Despite the defeat of Germany, H. remained a legendary figure with the Ger. people, who had never forgotten their Russian invaders. In 1925 he was elected president of the Ger. Rep. in succession to Ebert. A monarchist at heart, it was believed that he might support the

restoration of the monarchy; but he had a high conception of duty and of loyalty, and he followed a strictly constitutional course, until the economic crisis and the rise of Nazism in 1930 when, now 83 years of age, he became the tool of Junker reactionaries. He effected a *coup d'état* in 1932 and ruled by means of emergency decrees. In 1933 he made Hitler chancellor. In the year following Hitler's advent to power he *d.* and was given a national mausoleum at Tannenberg. His memoirs, *Aus meinem Leben*, 1920, show liberality of thought and restraint. See lives by M. Goldsmith, 1930, A. M. K. Watson, 1930, G. von Hindenburg, 1935, E. Ludwig, 1935, J. W. Wheeler-Bennett, 1936.

Hindenburg Line, otherwise **Siegfried Line**, name given to the line of field fortifications taken up by the Ger. armies in their retreat or withdrawal following the battle of the Somme, 1916. The withdrawal was, to some extent, an acknowledgment of defeat on the Somme; the Ger. High Command had prepared the field fortifications and works of this line so as to constitute it the most formidable defensive system theretofore evolved by the skill of military engineers. The Ger. High Command really believed the line to be impregnable. Yet even in 1917 the Brit. forces began a drive on 20 Nov. towards Cambrai, which for a time threatened to pierce the H. L. and even to terminate the deadlock on the W. Front. See also **BOURLON WOOD**; **CAMBRAI**; **FRANCE AND FLANDERS, FIRST WORLD WAR CAMPAIGN IN**. The H. L. was eventually smashed by the Brit. forces in Sept. 1918, following the successful piercing of the line at its strongest point, the Drocourt-Quéant (q.v.) Switch.

Hinderwell, par. of N. Riding of Yorks, England, comprising H., Staithes, and Hunswick Bay. It is largely agric.; H. lies 9 m. NW. of Whitby, and is 1 m. from the sea. Cleveland Bay horses are bred in the dist. The par. church at H. stands on the site of a cell of St Hilda, Abbess of Whitby (658-80). Pop. (of par.) 2300.

Hindhead, extensive hill ridge and common, rising 2 m. NW. of Haslemere, Surrey, England. Gibbet Hill, the highest point, is 895 ft. To the E. of H. lies the Devil's Punch Bowl. Inval and Weydown Commons lie S. of Gibbet Hill. The greater part of this area of heath and open wood was presented in 1906 by the Hindhead Preservation Committee. Highcombe Copse on the W. side of the Punch Bowl was purchased in 1908 through the W. H. Robertson Memorial Fund, and 14½ ac. of land in the Punch Bowl, known as Highcombe Bottom, were acquired in 1939 as the result of a public appeal.

Hindley, township, 2 m. ESE. of Wigan, Lancs, England, with cotton mills, paint works, and manufs. of rubber belting. Pop. 19,240.

Hindmarsh, suburb on Torrens R., 2 m. NW. of Adelaide, South Australia. Pop. 14,600.

Hindu-Kush, name of a mt chain of Central Asia which, for 200 m. from its E.

extremity, forms the S. frontier of Afghanistan. It is the great watershed between the Kabul and the Amu Darya (Oxus) basins, and its general direction is from WSW. to ENE. As the range turns away from Ab-i-Panja, an affluent of the Amu Darya, it attains greater elevation, rising sometimes as much as 24,000 ft above the sea. One of its loftiest summits is Tiraoh Mir, 25,400 ft, which towers above Chitral and its fort. The passes of Barogil, Agram, and Khartaza, etc., link the Amu Darya with the Chitral, whilst westwards the chief passes are the Khawak, the Kaoshan (14,340 ft), the most frequented of them all, the Chahardar, and the much lower Shibar (9800 ft), after which the range is merged into Koh-i-baba. See R. Schomburgk, *Between the Oxus and the Indus*, 1935.

Hindu Law is the personal law of the Hindus which has its origin in ant books which are claimed to be divinely inspired. Most famous of all are the *Shastras*, of which the *Dharma Shashtra* of Manu—the Code of Manu—is accorded a sanctity such as the Jews give to Mosaic law. Other *Shastras* and *Smritis* have contributed to the building up of an elaborate legal system which varies considerably in different parts of India, the principal being the *Smriti* of Yagnavalkya, the *Smriti* of Narada, the *Mithakshara* of Vijnaneswara (a commentary on Yagnavalkya), the *Dayabhaga* of Jimutavahana, the *Vyavahara Mayukha*, the *Smriti Chandrika*, and the *Mavada Chintamani*. The 2 main schools of H. L. were the *Dayabhaga* School in Bengal and the adjoining regions, and the *Mithakshara* School in other areas. The former made a Hindu male a partner in the joint family estate on the death of his father; the latter gave the newly-born male infant full partnership at birth. Ant Hindu lawgivers wrote for a state of society that has long passed away and their laws have been modified greatly by local customs and judicial interpretation. The Brit. continued to enforce Hindu personal law in matters affecting marriage and divorce, adoption, family ownership of property, succession, and inheritance through the new hierarchy of courts set up, even the Judicial Committee of the Privy Council contributing its share to the interpretation of ant texts in its capacity as an appellate court. The Brit. Parliament and Indian legislatures interfered very little with Hindu personal laws except when, for example, a reformist Hindu group, the Brahmo Samaj, demanded a form of civil marriage for those prepared to abandon orthodox Hinduism and polygamy, or when humanitarian considerations required the outlawing of malpractices which have crept into Hinduism, like widow-burning and child-marriage. In more recent times a demand for the reform of H. L. led to the appointment of a committee in 1942 which drew up a complete new Code after sev. years. Orthodox opposition led the new independent gov. of India to decide on piecemeal enactment of the various

sections of the Code and the first 2, those relating to marriage and divorce (and abolishing polygamy) and to succession and inheritance (giving women equal rights with men), had become law by the end of 1956.

See J. D. Mayne, *Hindu Law*, 1892; J. N. Bhattacharya, *A Commentary on Hindu Law*, 1894; K. P. Jayaswal, *Manu and Yagnavalkya: Basic Hindu Law*, 1930; D. F. Mulla, *Principles of Hindu Law*, 10th ed. by Sir Vepa Ramesam, 1946; Ganganath Jha, *Hindu Law in its Sources*; also the following official papers: The Rau Report, The Hindu Code Bill,

logians during the centuries succeeding the Vedic period had held sway; these revolts had the effect of rendering Brahminism still more tolerant, although its erstwhile severely metaphysical and ritualistic rigour had previously been modified by the currents of Sivaite and Vishnuite thought. The doctrine of the Trimurti, or Trinity, was often put forward under the influence of Upanishad monism. Brahma, the creative principle of the universe; Vishnu, the conservative principle; and Siva, the destroying, but also the generative, principle, are represented as a Trinity of equal and identical



Indian Railways Bureau

HINDUISM: THE TRIMURTI OR THREE-HEADED BUST

A representation of the Absolute Spirit in the character of Brahma, the Creator; Siva the Destroyer; and Vishnu, the Preserver

and the two recent enactments of the Indian Parliament referred to above.

Hinduism, comprehensive term which is used to designate not only the social customs but the religious beliefs of the majority of the peoples of India. The actual proportion of the total pop. which comes under the heading 'Hindu' is about 85 per cent, and the number of 'Hindus,' based on figures in the 1951 census, is approximately 303 million. The creeds and practices of H. differ no less than the organically connected social principles, rendering it very difficult of definition. The close alliance and interaction between Brahminism (q.v.) and H. make it impossible for a strict line of demarcation to be drawn from a chronological or a sectarian point of view. H. may be said to date roughly from about the 6th cent. BC, when the local revolts of the laity against Brahmanic supremacy culminated in Buddhism and Jainism. Until then the authoritative doctrine of pantheistic belief formulated by speculative theo-

deities. Early Brahminism and Buddhism co-existed down to about AD 800 when the latter disappeared from the peninsula, leaving a new Brahminism, the product of the 2 philosophies. This modern H., based on the *Puranas* (see *PURANA*) gives less prominence to Brahma than to his associates, Vishnu and Siva. To the vast majority of Hindus some form of either Vishnu or Siva is the highest source of all existence, and the object of supreme adoration. The sub-divs. of the Vishnuite sects range from the broadest pantheism to extreme sectarianism. The cult of Siva affects the 2 extremes of society: he is favoured by many high class Brahmans and metaphysical ascetics, and also by the lowest classes. The reason for this is that he is regarded not only as a mystic miracle-working deity, but as a blood-loving, awe-inspiring god. The Sakia movement, the worship of Siva's wife, under various names, as the cosmic energy of the universe, is closely allied to Siva-worship. The whole ground

of Hindu sectarianism is by no means covered by these broad outlines; many miscellaneous cults exist which are still included under the general term H. The pantheon of the latter finds room for hosts of minor deities, which are in the main accepted both by Vishnuites and Sivaïtes. Closely allied and interwoven with all the sects of H. is the system of caste. The infinite variety of caste-divs., each with a social and religious organisation of its own, was evolved from its beginnings in the Vedic age by the Brahmins. For details, see INDIA. Although H. has preserved numberless myths, and has incorporated much that is gross and unworthy, it has also gathered many spiritual truths from nature and the universe. Its main planks, the doctrines of 'Karma' (works), 'Samsāra' (wandering, i.e. metempsychosis), and 'Moksha' (release and absorption by, or union with, the Infinite), may seem fantastic to the European mind; but the Hindu mind is essentially mystic and transcendental, regarding all finite phenomena as evanescent and illusory, and if this is remembered, due honour and praise will not be withheld from its vast and beautiful religious literature. In such works as the *Upanishads*, the *Bhagavad-gita*, the *Tamil Sivaïte* poems, the *Rāmāyana*, and many others, the truth that the pure in heart, of whatever creed or race, shall see God is manifested. Despite their faults they represent a notable progress of the human mind in spiritual and religious evolution. 'They are but broken lights of Thee, and Thou, O Lord, art more than they,' and more than any other religious system. See Sir M. Monier Williams, *Hinduism*, 1877; J. Robson, *Hinduism and Christianity*, 1883; J. Murray Mitchell, *Hinduism Past and Present*, 1897; L. D. Barnett, *Hinduism*, 1906; C. N. Eliot, *Hinduism and Buddhism*, 1921; L. S. O'Malley, *Popular Hinduism*, 1935; N. Macnicol (ed.), *Hindu Scriptures* (Everyman's Library), 1938; J. Herbert, *La Notion de la vie future dans l'Hindouisme*, 1945; A. C. Bouquet, *Hinduism*, 1949. See also ARYA SAMAJ; BRAHMA; BRAHMO SAMAJ; SIVA; VISHNU; etc.

Hindus, Maurice Gershon (1891-), Russo-Amer. author, b. Russia. He migrated to the U.S.A. in 1905 and graduated from Colgate Univ. in 1915. He has frequently revisited Russia and returned there after the Civil war to see the progress of the collectivist experiment in agriculture, with which, indeed, he was in sympathy. An account of this will be found in his 2 very remarkable novels *Broken Earth*, 1926, and *Red Bread*, 1931; in the latter he describes the collectivisation of his old vil. (see also KULAK). His other novels include: *Humanity Uprooted*, 1929, *The Great Offensive*, 1933, *Moscow Skies*, 1936, and *Sons and Fathers*, 1940. His non-fictional studies of Russia include *The Russian Peasant and Revolution*, 1920, *We Shall Live Again*, 1939, and *Mother Russia*, 1943. *Green Worlds*, 1938, is an autobiography of his youth.

Hindustan, or Hindostan, means the country of the Hindus. The Persians used to call the R. Sindhu 'Hindu,' and the dist. it drained was therefore called H. The region denoted was gradually extended, until the whole tract of country between the Himalaya Mts and the Vindhya Mts, W. of Bengal, was so designated. At one time H. was often used as a name for the whole of India, but the term has now largely fallen into disuse and, if used, normally applies to the central Gangetic plain.

Hindūstāni Language and Literature. H. may have 2 meanings. (1) In its wider sense the term indicates the bazaar speech or vernacular language of N. India, this term being derived from Iranian *Hindī*, 'Indian.' Accepting this wider meaning, we may distinguish about 60 H. languages, dialects, and sub-dialects, spoken by about 200 million people. (2) More exact is the restricted meaning of this term. H. would, thus, be the main dialect of W. Hindi (as distinct from E. Hindi), which is spoken by about 50 million people. Originally the speech of N. Doab, H. was carried over the whole of India by the Muslims, while the literary H. (in its 2 forms, Urdu and Hindi) has become the modern literary language of most of India. Early in the 17th cent. H. was already the *lingua franca* of India.

H. can be written in various scripts. Muslims employ the Persian-Arabic alphabet with a few additional signs for sounds peculiar to Indian languages not found in Persian. H. thus written is known as *Urdu*; the term probably derives from *urdu-e-mu'allā* (the royal military bazaar outside the Delhi palace) and *zaban-i-urdu*, 'language of the camp.' Urdu makes free use of Persian and Arabic words in its vocabulary, and in consequence it has become widely different from H. free from Persianisation, which is known as *Hindi* or *High Hindi*. The latter owes more to Sanskrit; it is used only by Hindus who have been educ. on a Hindi system; and it is usually written either in Deva-nagari character (for literary purposes) or in current hands, such as Kaithi, Mahajani, and similar scripts. Urdu and its Arabic-Persian script have been officially adopted by the Pakistan Rep.

H. literature starts with the epic by Chand Bardai, c. 1200 (*Prithī Rāj Rāsau* or *Chand Rāsed*); in the 14th cent. Śaṅgadhār wrote *Hamīr Kāvya* and *Hamīr Rāsau*. But generally speaking H. did not become a literary language until the 16th cent., and under the influence of their Mohammedan conquerors the Urdu writers sought inspiration in Persian literature. Urdu writers borrowed both form and imagery from Persian poetry, while their prose is also largely imitative of Persian prose. During the time of Akbar (1556-1605) it was compulsory that all gov. clerks should know Persian, and from this date the Urdu language became more standardised. From the 16th cent. onwards European

languages, chiefly Portuguese and Eng., have also influenced Urdu. In Urdu prosody there is no accent as in Eng., but only vowel quantity. Rhyme (*qafia*) and double rhyme (*radif*) are greatly used. There are 15 standard metres, while the prin. kinds of verse are *ghazal*, an ode; *qasida*, a purpose poem; *gita*, a fragment of *qasida* or *ghazal*, but differing from them in rhyme and often used for didactic poetry; *rubai*, a quatrain form; *masnavi*, double-rhymed, used for ballads, epics, and romances; *musaddad*, a poem in which a few words are added to each line beyond the length of the metre; *murabba*, rhyming hemistichs in sets of 4; *mukhammas*, rhyming hemistichs in sets of 5; *musaddus* in sets of 6; and others, such as *musabba*, in sets of 7. *Wasokhi*, burning backwards, is a love poem in which the poet complains of the heedlessness of his beloved, and *tarikh* is a chronogrammatic poem, while *fard* is a single verse used as a quotation. The earliest form of Urdu literature is poetry, and Amir Khusra is the first known poet, writing in the 13th cent. The 2 most celebrated of Urdu poets—Rafi Saada, the satirist, and Mir Taqi, the narrative poet and sonneteer—lived in Delhi in the 18th cent. There are 3 kinds of Urdu prose: *ari*, naked and unadorned; *murajjaz*, cadenced, using metre without rhymes; and *musajja*, in which rhyme is used without metre. There are also 3 kinds of *naar musajja* or rhymed prose. Early Urdu prose is marred by the frequency of its jingling rhymes, and it was not until the 19th cent. under the influence of Ghalib and Sir Syed Ahmed Khan that it became free of rhymes and the long, complicated Persian constructions. Fiction, as distinct from romance, together with journalism did not come into existence until the end of the 19th cent., but thanks to a popular press, and even more the radio and the films, there is now a considerable output. There is also a growing demand for scientific, technical, and educational books in Hindi and Urdu.

Hine, Reginald Leslie (1883–1949), lawyer and historian, b. Newnham, Herts. A scholar of great ability and skill, and a writer and lecturer of charming and gracefully allusive style, he devoted his gifts chiefly to the comparatively limited world of local tn and co. hist., Hitchin being his special study. At the time of his death by suicide, he was engaged on a hist. of Herts. His writings include: *Lyra Cellitica*, 1912, *Dreams*, 1913, *The History of Hitchin* (2 vols.), 1927–8, *Samuel Lucas, Life and Art Work*, 1928, *A Mirror for the Society of Friends, Being the Story of the Hitchin Quakers*, 1929, *Hitchin Worthies*, 1932, *The Natural History of the Hitchin Region*, 1934, *Confessions of an uncommon Attorney*, 1945, and *Charles Lamb and his Hertfordshire*, 1949.

Hinkler, Bert (1894–1933), Australian airman, b. Bundaberg, Queensland; he took to flying and came to England in 1914. In 1928 he carried out a lone flight to Australia in 15 days, covering 10,000 m. He disappeared on a cross-

European flight, and his body was found in Italy.

Hinkson, Katharine Tynan, see **TYNAN**. **Hinnøy**, Norway's largest is. and largest is. of the Lofoten group off the coast of Norway, within the Arctic circle. It is mountainous and somewhat wooded. Harstad, to the N. is a most important tn and port. Pop. 24,000.

Hinny, hybrid offspring of a stallion and a female ass. Compared with the mule, which is the cross between a male ass and a mare, it is more tractable and less obstinate: at the same time it is not so sturdy and is smaller in size. It is less common than a mule, because less useful. See **MULE**.

Hinojosa del Duque, Sp. tn in the prov. of Córdoba. It has textile manufs., and there are valuable copper mines near. Pop. 12,000.

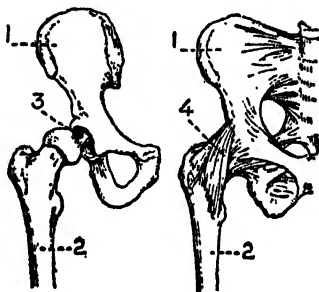
Hinsley, Arthur (1865–1943), cardinal, b. Carlton, near Selby, Yorks. Educ. at Ushaw and passed to the Eng. College at Rome. Took a doctorate at the Gregorian Univ. and returned to Ushaw as a prof., 1893. In 1899 he became headmaster of St Bede's Grammar School, Bradford. Transferred in 1904 to the diocese of Southwark as par. priest of Sutton Park. In 1917 he was chosen to be rector of the Eng. College in Rome. Created titular bishop of Sebastopolis, 1926. In 1928 he was appointed to the post of 'Apostolic Visitor to the African Missions in Brit. Territory' and secured the co-operation of the Rom. Catholic missions in schemes of educational reform in all parts of Brit. Africa, being created, in 1930, Apostolic Delegate in Africa and titular archbishop of Sardes. He will be remembered as one of the more significant of those men who have influenced Africa for good, especially as he represented the Pope in the Fr. colonies as well as the Brit. In 1934, after a serious illness, he was created a canon of St Peter's, but at the age of 69 was chosen to succeed Cardinal Bourne in the see of Westminster. He went to Rome in connection with the canonisation of the Eng. martyrs Thomas More and John Fisher. At the end of 1937 he was raised to the sacred college with the title of Santa Susanna. Held strong views on the subject of the persecution of the Church in Russia, Mexico, and Spain, and, later, turned his powerful oratory against Nazi paganism. After the fall of France in 1940 he founded a new society, 'The Sword of the Spirit,' for mobilising Catholics to promote, as a religious duty, the victory of the allied arms, and the reconstruction of Europe. H. had an engaging personality, which made him beloved by all who came in contact with him.

Hinterland, Ger. word expressing the country which lies at the back of colonies, which, in an unexplored continent, naturally grow up near the coast. It is connected with a theory of colonial expansion. Most early settlers, like those in North America and in Africa, assume rights over a much wider area than that which they have so far developed or

explored. Thus those Eng. colonists who had peopled a mere coastal strip arrogantly claimed jurisdiction over vast regions W. of the Mississippi, and were not slow to show their resentment at what they regarded as the iniquitous appropriations of Fr. explorers along that riv.'s course. The theory about the 'hinterland' made a very strong appeal to the Ger. emigrants of Bismarck's day.

Hip, in architecture, the salient angle formed by the intersection of 2 sloping roof-surfaces: hence 'hip rafter,' 'hip tile.'

Hip-joint, ball and socket joint (enarthrosis), somewhat resembling that of the shoulder but with considerably less extent



HIP-JOINT, FRONT AND BACK VIEW

1. Haunch bone; 2. Femur; 3. Round ligament; 4. Capsular ligament

of movement. The pelvic socket (acetabulum) is considerably deeper than is the case in the glenoid cavity of the shoulder joint. The investing membranes and tissues are also much less lax than those of the upper limb, and in consequence the whole is considerably stronger. The capsule has 3 well-marked investing bands: (1) The ligament of Bigelow, which is mainly concerned in the maintenance of the erect position of the body, is particularly strong and seldom ruptures, even in cases of the dislocation of the joint. It is in the form of an inverted Y, in which the upper part is attached to the ilium and the limbs of the Y are fastened to 2 distinct portions of the head of the femur. The other ligaments connect the femur with the pubis and the ischium respectively. The ligamentum teres or round ligament passes from a slight fossa in the spheroidal head of the femur to the interior of the acetabulum. It is absent in some mammals. Gripping the head of the femur is the ootylod ligament, which lies inside the capsule and deepens the margin of the socket; it is continued as the transverse ligament. The synovial cavity extends along the neck of the femur beyond the limits of the articular cartilages.

The H. is subject to the same diseases and injuries as other joints (see under ARTHRITIS; RHEUMATISM; TUBERCULOSIS; DISLOCATIONS). A congenital form of dislocation of the H. may occur. It may be bi- or unilateral and is more common in girls than boys. This condition is not due to injury but to a structural failure in which the head of the femur is not contained within the acetabulum but lies above it. There is shortening of the leg on the affected side and a limitation of abduction or outward movement. Congenital dislocation is not noticed as a rule until the child starts walking, when a characteristic rolling gait is observed. Treatment consists in manipulating the head of the femur into the acetabulum and holding it in position by a plaster of Paris splint until stability is achieved.

Hipparchus (c 160-120 BC), founder of scientific astronomy, b. at Nicaea (in Bithynia), and lived in Rhodes and Alexandria, though some doubt whether he ever saw the latter place. His greatest discovery was that of the precession of the equinoxes, but he also investigated the true periods of the revolution of the moon and of the solar year, and showed how places might be more accurately located on the globe with reference to the lat. and long. of stars. The discovery of the eccentricity of the earth's orbit is also due to H. To H. also are traceable the beginnings of trigonometry, both plane and spherical. It is only recently that the true greatness of H. has been appreciated, as Ptolemy had for centuries the credit of his predecessor's observations. See H. Berger, *Die geographischen Fragmente des Hipparchus*, 1870.

Hipparchus, see HARMODIUS.

Hipparion (Gk, 'a pony'), name of a genus of extinct fossil ungulate mammals belonging to the Perissodactyls and the family Equidae, and found in the Upper Miocene and Pliocene strata of Europe, North America, and Asia. H. is usually regarded as one of the ancestors of the horse, though differing considerably in structure and being about the size of a pony. It has 3 toes, the outer digits not reaching the ground, the ulna being better developed than in the horse.

Hipper, Franz von (1863-1932), Ger. admiral. At the outbreak of the First World War he was in command of the 2nd squadron of the Ger. High Sea Fleet. At the battle of the Dogger Bank (q.v.) in Jan. 1915 he commanded the Ger. raiding cruiser squadrons. At the battle of Jutland (q.v.) in May 1916 he was in the *Lützow* as Chief of the Reconnaissance Force, an appointment of great responsibility, which he ably filled. He succeeded von Scheer as commander-in-chief of the Ger. Fleet in Aug. 1918. He received the freedom of Wilhelmshaven for his Jutland services. See life by H. von Waldeyer Hartz (trans. by F. A. Holt), 1933.

Hippias of Elis (late 5th cent. BC), Gk sophist, contemporary with Socrates, who taught at Athens and figures in the *Hippias Major*, *Hippias Minor*, and *Protagoras* of Plato as a man puffed up

with his own conceit. In learning he was a pedant; in literature a dilettante who tried his hand at every form of composition. Once at the Olympic games he boasted he had made all his apparel and was master of every mechanical as well as liberal art. See W. Jaeger, *Paideia* (trans.), 1939; E. Dupréel, *Les Sophistes*, 1948.

Hippocampus, name of genus of teleostean fishes belonging to the family Syngnathidae and commonly called sea-horses. The tail can be curled round weeds or other objects and a sea-horse swims in an upright position by means of undulations down the dorsal fin. The males have a brood pouch in which the young are hatched.

Hippocras, or *Vinum Hippocraticum*, old aromatic medicinal wine, prepared from spices, such as cinnamon, ginger, lemon peel, and almonds, mixed with white wine and sweetened with sugar or honey.

Hippocratea, family Hippocrateaceae, genus named in honour of Hippocrates, though of no medical value. *H. obtusifolia* is a tropical climbing shrub with leathery, glabrous leaves.

Hippocrates (c. 460-c. 375 BC), celebrated Gk physician, the 'Father of Medicine,' was a native of the is. of Cos. He travelled widely throughout Greece, and d. at Larissa in Thessaly. H. was a careful, observant physician, and a strong believer in surgery. The presence of disease, he believed, was due to a wrong proportion in the body of the humours, which he classified as phlegm, blood, and black and yellow bile. To him is ascribed the authorship of the Hippocratic Oath, the earliest and most impressive statement on medical ethics (see W. H. S. Jones, *The Doctor's Oath*, 1924). The chief works attributed to him are: *Aphorisms*, *Prognostics*, and *Airs, Waters and Places*. The best-known eds. are: Foessius (Geneva), folio 1657; E. Littré (10 vols.), 1839-61, with Fr. trans.; and the Eng. trans. of Adams, 1849, and W. H. S. Jones, 1923-31. See also F. Jevons, *History of Greek Literature*, 1886; and E. T. Withington, *Hippocrates*, 1927.

Hippocrene, see HELICON.

Hippodamia, wife of Pelops (q.v.).

Hippodrome (Gk *hippos*, horse; *dromos*, a course), Gk name for a building which corresponded to the Rom. circus (see CIRCUS). It was usually from 600 to 700 ft long and about 400 ft wide, semicircular at one end and square at the other. Tiers of seats enclosed the whole area except the square end, which was the starting and finishing point. Down the centre ran a div. at the extremities of which the chariots turned, a manoeuvre requiring exceptional skill. The largest and most famous H. of antiquity was at Constantinople (q.v.), built between AD 203 and 330. Remains of this elaborate structure can still be seen: its ornaments included an Egyptian obelisk, the serpent tripod from Delphi (q.v.), and the magnificent bronze horses now on the façade of St Marks in Venice.

The H. at Constantinople became a centre of political life, or rather of violent political faction. Adherents of the sev. colours under which the chariots raced formed themselves into cabals, often with disastrous consequences (see NIKA RIOT).

Hippodrome, London, theatre opened at the beginning of 1900. A feature of past performances was an aquatic display, for which the building was specially adapted. A number of musical plays and revues have been produced here, one of the most successful of the latter being *Joy Bells*, 1919. Since 1950 productions have included *Bet Your Life*, *High Spirits* (a revue), *Wedding in Paris*, *The Caine Mutiny Court Martial*, and *Meet Me on the Corner*. The theatre was converted, 1957-8, into a combined theatre and restaurant.

Hippogriff, or **Hippogryph**, fabulous animal, unknown to anc. writers, represented in comparatively modern literature as a winged horse with the head of a griffin, and described as the horse of the Muses. It was used by Ariosto in his *Orlando Furioso*, and by many writers of the Renaissance.

Hippolyte, queen of the Amazons, daughter of Ares and Otrera, and sister of Antiope and Melanippe, led a troop of Amazons in pursuit of Antiope, but was defeated and fled to Megara, where she d. of shame and grief; or, in another version, became the wife of Theseus. Yet another tradition makes Theseus kill her to secure her girdle, the gift of Ares.

Hippolytus, mythical son of Theseus, by Hippolyte or Antiope. His step-mother, Phaedra, fell in love with him, and, on his repelling her, complained to Theseus that he had assaulted her. His father cursed him and besought Poseidon's aid in destroying him. While H. was riding in his chariot by the seashore, Poseidon sent forth a sea-bull which frightened the horses, so that the chariot overturned and H.'s body dragged along the ground till he d. Virgil makes Diana persuade Aesculapius to restore him to life, and put him under the care of Egeria in the grove of Aricia in Latium. See Euripides, *Hippolytus*.

Hippolytus, St, the martyr, b. c. 160, a pupil of St Irenaeus, became a prominent theologian and controversialist at Rome under Pope Victor, who ordained him. Under Victor's successor, Zephyrinus, he became the bitter rival of Calixtus, a freedman and confessor, who had been made archdeacon. When Calixtus became pope, II. withdrew with his disciples into schism, secured his own consecration and election, and claimed to be the true bishop of Rome. H. was a rigorist and opposed the restoration to communion of mortal sinners, which Calixtus granted. In 235 during the persecution of Maximinus H. and Pope Pontianus together were sent to the Sardinian mines, where both perished. Their bodies were translated to Rome, c. 244, where the recognition of both as martyrs healed the schism. Of H.'s works, *The Apostolic Tradition* is of particular importance for the study of the liturgy; and the *Philosophumena* is

our main source for the life of Calixtus. See also POPPS, LIST OF THE.

Hippomane Mancinella, manchineel-tree, Manzanillo, a genus and species of Euphorbiaceae which frequents Central America, Columbia, and the West Indies. It is a tall, handsome tree containing a milky latex that is highly poisonous.

Hippomenes, son of Megareus, won the Boeotian Atalanta by fraud. She promised to marry the suitor who should outrun her. H. had 3 golden apples dropped in her path, and in stooping to pick them up she lost the race. See ATALANTA.

Hipponax (fl. 6th cent. BC), Gk iambic poet of Ephesus. He was banished from his native city by the tyrant Athenagoras c. 542, and spent his exile in Clazomenae. He was regarded as the inventor of a limping metre, called the *choliambus* or *scazon*, in which a spondee is substituted for the final iamb of an iambic senarius. His poems are satirical and not infrequently coarse. See J. M. Edmonds, *Elegy and Iambus*, 1931.

Hippopotamus (Gk for river-horse), member of a family of artiodactyl mammals. To-day it is found only in Africa, but fossils of a larger breed of hippopotami have been found in England, the rest of Europe, and in India, etc. The com-

aquatic, nocturnal, and voracious. It is a good swimmer and diver, and as its respiration is slow, it can stay a long while under water. By day it is sleepy and languid, but by night it often comes out of the water to graze on the banks, or if it lives in a cultivated region, it will make substantial inroads into crops and cause great destruction. It is this bad habit which accounts for its disappearance from the fertile plains of the lower Nile. It is gregarious by nature and usually playful and good-tempered, but persistent pursuit often provokes a dangerous passion. When angered it emits a loud and piercing noise, which has been likened to the grating sound of a creaking door. Hunters chase it in a variety of ways, sometimes it is ensnared in pits, sometimes it is shot, harpooned, or pierced with spears from a canoe. The teeth are valuable as ivory, the tongue, the fat, and the jelly from the feet are favourite articles of diet, whilst the hides find many markets.

Hippuric Acid, or **Benzoyl-glycocoll** (CH₃NHCOOCH₂·COOH), colourless crystalline substance, melting at 187° C.; it is soluble in hot, but scarcely soluble in cold, water. It occurs in the urine of herbivorous animals, from which it may be obtained by evaporation. It is best prepared by the action of benzoyl chloride on glycocoll, or of chloroacetic acid on benzamide. On boiling with dilute acids H. A. is hydrolysed to benzoic acid and glycocoll.

Hirado, is. of Nagasakiken, Kyushu, Japan. It is 19 m. long and 6 m. wide, noted for its blue and white porcelains (*Hiradoyaki*) and azalea. In 1549 St Francis Xavier (q.v.) arrived in Japan and worked at H. for a while. In 1609 the Tokugawa Shogunate Gov. allowed Dutch merchants to trade with Japan through the seaport of H., which was opened in the following year; but the country was gradually closed to foreigners, and in 1641 the Dutch residents were transferred from H. to Nagasaki Dejima, which remained the only port available to Europeans until Japan was re-opened in 1854. Cap. Hirado. Pop. 43,000.

Hiranyagarbha, Hindu name for the Creator or First-Born, which may be rendered into Eng. as 'Golden Embryo' or 'Golden Child.' To him is addressed an exquisite hymn of the *Rig-Veda-Samhitā*, which is an anthology of sacred songs composed by the Aryas of India from 1500 to 1000 BC. The hymn referred to, which, as poetry, ranks with the Book of Job, shows how the Vedic philosopher was groping his way towards the Oneness of Deity. H. was Brahma, who came forth from a golden egg.

Hire Purchase Agreement, agreement under what is called the hire system, is a document whereby goods, generally furniture, are delivered to a person by the vendor to be paid for by instalments of rent, the goods to become the property of the hirer if he pays the whole of the instalments. By the terms of some agreements the so-called 'hirer' is bound to pay for and purchase the furniture, which



Salour Photograph

HIPPOPOTAMI IN KRUGER NATIONAL PARK

mon species, *H. amphibius*, inhabits rivers in all parts of Africa, but the smaller, *Choeropsis liberiensis*, is restricted to the W. of that continent. In size a H. is only a little inferior to the elephant; its legs are very stunted, so that its belly touches the ground when it walks on mud or other yielding surfaces; there is often as much as 2 in. of skin on the back and flanks; but no hair covers its dark brown hide; its small eyes are set high in the huge, ungainly head with its great snout and enormous rounded muzzle; the tail is quite short, and on each foot there are 4 even and hooved toes. The animal is

is therefore his property *ab initio*, subject to the obligation to pay on easy terms. But usually H. P. A.s are so drawn as to reserve the property in the goods in the vendor until all the instalments have been paid, the hirer, properly so called, being under no obligation to purchase. The disadvantage to the hirer in this latter form of H. P. A. is that if he does not keep up his instalments, or exercise his option to purchase, the vendor is entitled to seize the goods and keep the whole of the payments already made to him. Most firms who sell goods on 'easy terms' have printed forms of H. P. A.s, and it is essential thoroughly to master the details of the agreement before signing it, so as to avoid liability in the event of inability to keep up instalments. Abuses of the system long excited complaints, and in 1938 an Act was passed giving the hirer protection from unreasonable demands and conditions, and allowing for the termination of an agreement by return of the goods hired after a specified number of instalments has been paid. The Hire Purchase Acts, 1938-54, apply to all H. P. A.s and credit-sale agreements under which the hire-purchase price or total price, as the case may be, does not exceed (a) for livestock, £1000; (b) in any other case, £300. Before any agreement is entered into, the owner must state in writing (otherwise than in the note or memo of agreement) a price (the 'cash price') at which the goods may be purchased by the prospective buyer for cash; but this requirement is sufficiently complied with if the hirer has already inspected the goods and also if they were labelled with the price or he has selected the goods from a priced catalogue. An owner cannot enforce a H. P. A. or any contract of guarantee relating to it or any right to recover the goods from the hirer, and no security given by the hirer or by a guarantor for him will be enforceable against the hirer or guarantor unless the requirement as to stating the price has been complied with; and also unless a note or memo of the agreement is made and signed by the hirer and by all other parties to the agreement; and the note or memo must contain a statement of the hire-purchase price and of the cash price and of the amount of each of the instalments and of the date on which each instalment is payable, and it must contain a list of the goods to which the agreement relates sufficient to identify them. A copy of the note or memo must be delivered or sent to the hirer within 7 days of the making of the agreement. The Court, however, has a discretionary power to dispense with some of these requirements if the hirer has not been prejudiced by the failure of the owner to comply with them. There are analogous provisions on the statutory requirements relating to credit-sale agreements where the total purchase price exceeds £5. A hirer can, at any time before the final payment under a H. P. A. falls due, determine the agreement by notice in writing to any person entitled or authorised to receive the sums payable

under the agreement. He will be liable, without prejudice to any liability which has accrued before the termination, to pay the amount, if any, by which one-half of the hire-purchase price exceeds the total of the sums paid and the sums due in respect of the hire-purchase price immediately before the termination, or such lesser amount as may be specified in the agreement. Where the hirer, having determined the agreement, wrongfully retains possession of the goods, then, in any action by the owner to recover them, the Court may order the goods to be delivered to him without giving the hirer an option to pay the value of the goods. Knowingly selling or pledging goods not completely paid for under a H. P. A. which does not vest the property in the hirer *ab initio* may render the hirer liable to prosecution for larceny as a bailee. A H. P. A. under which the goods remain the property of the vendor till full payment is not a bill of sale within the meaning of the Bills of Sale Acts, and therefore the goods, not being within the hirer's 'apparent possession,' may not be seized in execution (q.v.) by the hirer's creditors, and they cannot, generally speaking, be distrained upon for rent owing in respect of the premises in which they may happen to be. The licence to seize frequently inserted in such H. P. A.s merely enables the vendor to retake what is his own property in the event of non-payment. The goods of a bankrupt trader delivered under a H. P. A. vest in his trustee in bankruptcy and form part of the assets available for his creditors generally, unless there is a well-recognised custom in the bankrupt's trade to hire goods of the kind comprised in the H. P. A. A H. P. A. requires a 6d. stamp, and if under seal (see DEED) a 10s. stamp. See R. Harris and A. Seldon (ed.), *Hire Purchase*, 1958.

Hirohito (1901-), Emperor of Japan, bearing the title of Nipponkoku Tenno; descended from a dynasty going back to the early 1st cent. BC. First son of Yoshihito, Taisho Tenno (1912-26), he was formally nominated as Crown Prince in 1916. He travelled in Europe for 6 months in 1921, when he became regent; married Princess Nagako in 1924, and succeeded to the throne in 1926. Akihito (b. 1933), his eldest son, has been Crown Prince since 1952. H. is a keen student of biology, and has discovered a number of new species recorded in his 4 books on the 'Protozoa of Sagami Bay.' After the defeat and surrender of Japan in the Second World War, a new constitution (Nov. 1946) profoundly changed the status of the Jap. Emperor. The constitution rests on the foundations of the State, not, as theretofore, upon divine mandate, but upon the will of the electorate; and it restricts the functions of the Emperor, now a symbol of the State.

Hirosaki, second largest city of Aomori-ken, N. Japan, 20 m. SW. of Aomori. Noted as an agric. centre, it is especially famous for its vast apple culture and traditional lacquer ware (Tsugarunuri). Pop. 139,000.

Hiroshige (Ando Tokitaro) (1797-1858), Jap. landscape painter. True name Ando Tokitaro, he adopted the name of H. conformably to convention in recognition of his being a pupil of Toyohiro. H. was one of the chief members of the *Ukiyo-ye* or popular school of painting in Japan (see also *Hokusai*), a school which was especially occupied in making colour prints. H. and his pupils (2 of whom adopted the name of H.) applied the process of colour block printing for landscapes with a skill and harmony of effect that have only been equalled in Japan by Hokusai and certainly by no W. artist. Most of the subjects of H. and his pupils were taken from the vicinity of Yedo or were scenes on the old highway between Tokaido and Kioto.

Hiroshima, the seat of prefectural gov. of Hiroshimaken (3000 sq. m.), Japan. Situated on the ls. and shores of the delta where the R. Ota falls into the Inland Sea; but although hills rise to 700 and 800 ft to the immediate NW. and NE., the city stretches over flat ground in all directions for roughly 2 m. from the centre. Before the Second World War it was an important seaport and one of the chief centres of commerce and education in W. Japan, though with every Japanese and traveller its name was inseparably associated with the 'Island of Light,' Miyajima, 10 m. SW., which rises from the picturesque bay opposite. This is. of woods and crags is famous for the great temple of the goddess Benten (begun in 587), which is accounted one of the glories of Japan, and was yearly thronged by a multitude of pilgrims. The name of this ill-starred city, however, will go down to hist. as that of the first victim of the terrible atomic bomb. On 6 Aug. 1945, shortly after 8 A.M., an Amer. Super-Fortress B-25 flying at 30,000 ft dropped a single atomic bomb over the city and the bomb exploded over the city centre. The city centre, once the Old Tn, was dominated by a number of reinforced concrete buildings owned by banks, insurance companies, dept stores, newspapers, and similar mercantile enterprises. Beyond the Old Tn lay an industrial zone developed during the early part of this century, and consisting of many small wooden workshops set among dense Jap. houses. A few larger plants devoted to engineering and silk manuf. lay on the S. and W. outskirts of the city. The city was a prosperous trading community having some contacts with the outside world, and its centre was spaciouly planned, with fine streets and temples. Like other Jap. cities, H. was growing rapidly before the war; its census pop. rose from 270,000 in 1930 to 345,000 in 1940. It remained at this figure for the greater part of the war, but began to fall in 1944, and at the time of the attack it was below 245,000. This fall was the result of evacuation, in the main compulsory and accompanied by the systematic destruction of houses to form fire breaks—a programme to which impetus had been given by the great incendiary raids on

Tokyo and other Jap. cities in the second week of Mar. 1945; and the process was only partly completed in H. when the atomic bomb fell. The result of the explosion of the bomb was catastrophic and it was soon followed by the dropping of a second atomic bomb on Nagasaki and the ending of the war, towards which the 2 bombs largely contributed. In H. the bomb exploded above a level expanse of more than 10 sq. m. of wooden houses, destroying over 4 sq. m. first by blast and then by fire. The strong reinforced concrete buildings which dominated the centre of the city mostly resisted the blast, but were burnt out. The modern industrial zone outside the city, at 1½ m. and more from the centre of damage, was beyond the range of severe blast. It is officially estimated that approximately 80,000 persons were killed. Including the number who suffered from strong radioactivity and d. within a year, casualties amounted to about 140,000. The severity of the disaster (as also at Nagasaki) was increased by a panic flight of pop., in which even fire and rescue services were abandoned, and which brought communal life virtually to a standstill. The mere clearance of debris and the cremation of the dead trapped in it had to wait a month for the return of the pop. Most striking of the blast effects was the distortion of all types of building as a whole, leaving them leaning as if after a high wind rather than an explosion. Many of the reinforced concrete buildings at H. were of unusually strong design, intended to resist earthquake. These, even when virtually under the explosion, usually suffered no serious structural damage except some depression of the flat roof, sometimes to saucer shape. As might have been expected from a bomb exploded at such a height, the effect on underground services was insignificant. Similarly, roads and railway tracks were unaffected. Bridges were displaced but usually by very small amounts. For a fraction of a second there was an intense flash from the bomb, the radiated heat from which scorched objects fiercely and at great distances. Among the resulting effects were the roughening of polished granite and other stones, the raising of bubbles on roof tiles, the reddening of concrete, the darkening of asphalt road surfaces which retained the 'shadows' of passers-by at the instant of the explosion, and the scorching of painted and unpainted timbers, of fabrics, and of the human skin. Pregnant women who survived within 1000 yds of the centre of damage had miscarriages; those who survived up to 1½ m. from the centre had miscarriages or premature infants who soon d. Even substantial buildings were penetrated by the gamma rays from the explosion and gave no protection. The rays had the effect of passing through the skin without seeming at first to affect it. It is thought that the gamma rays caused the death of nearly everyone who was fully exposed to them up to a distance of half a m. from the centre of danger. People who were directly under the

explosion in the open had their exposed skin burnt so severely that it was immediately charred dark brown or black; these people *d. within mins.* or at most hrs. Both in H. and Nagasaki, burns on exposed skin were very severe up to about 1500 yds from the centre of damage. Buildings and walls gave complete protection from flashburn. There was strong evidence that heat radiation was a cause of fires in unscreened buildings, probably up to a distance of a m. from the centre of damage. A number of reinforced concrete buildings with shuttered windows escaped fire, apparently because the heat radiation, travelling at the speed of light, arrived and died away before the blast, travelling only at a few thousand ft a sec., blew out the shutters to expose the interior. See *The Effect of the Atomic Bombs at Hiroshima and Nagasaki: Report of the British Mission to Japan*, H.M.S.O., 1946, and J. Hersey, *Hiroshima*, 1946. By 1948 H. was to some extent rebuilt. Plans exist, on paper, for making the city a permanent centre of culture and peace. There are to be wide roads, parks, and tree-lined boulevards. But the immediate tasks were road repairing, waterworks construction, and school rebuilding. Within 5 years of the disaster H. was rebuilt, and many of the leading artists and architects contributed to the main features of its design. In 1956 H. had a pop. of 358,000, 6 colleges, 22 high schools, 38 primary schools, and 4 libraries. The main products are tinned food, needles, rubber goods, cotton fabrics, paper, furniture, etc. More important, however, are the chemicals, metal goods, and motor industries.

Hirpini, Samnite tribe dwelling E. of Naples, with their cap. at Acculanum. They received the Rom. franchise from Sulla in 83 bc.

Hirsch, Maurice, Baron de (1831-96), Jewish philanthropist, b. Munich. As partner in the banking house of Bischoffshelm and Goldschmidt, of Brussels, London, and Paris, he amassed a huge fortune. He founded the Jewish Colonisation Association, and endowed it with capital of £9,000,000, the object of which was to give his persecuted co-religionists of Russia facilities of emigration.

Hirschberg, see JELENIA GORA.

Hirson, Fr. tn in the dept of Aisne, on the Oise. It is a railway junction, and has metallurgical and glass works. Pop. 10,200.

Hirtius, Aulus (c. 90-43 bc), Rom. historian, was a friend of Cicero and Caesar, and author of the eighth book of *De Bello Gallico*. The narrative of the Alexandrian campaign is also usually attributed to him. The colleague of Pansa in the consulate of 44, he was slain in the battle of Mutina, though it was Antony, his enemy, who met defeat.

Hispalis, see SEVILLA.

Hispania, see SPAIN.

Hispaniola, former name of Santo Domingo (q.v.); see also DOMINICAN REPUBLIC; HAITI.

Hispano-Moresque Ware, name given to the lustred tin-glazed earthenware made in Spain by Moorish and Sp. potters both before and after the expulsion of the Moorish rulers, and also to non-lustred tin-glazed earthenware of Valencia, Seville, and Granada.

Technique.—Lustre-decoration consists of a film of metal reduced from an oxide or sulphide, covering the surface of the earthenware. The lustre-pigment is applied over the fired glaze and refired in a reducing atmosphere, obtained by means of burning damp brushwood.

History.—Lustred-ware was made in the Near East by the 9th cent. and in Spain by the 12th cent. During the 14th-16th cents. Sp. lustred-ware was produced at Malaga and Valencia, and from the latter it was exported in great quantities to Italy, where it was known as 'maiolica' (q.v.). See EARTHENWARE, European; TILE.

Hiss, Alger (1904-), Amer. lawyer and politician, b. Baltimore, Maryland, and graduated from Johns Hopkins Univ., 1926, Harvard Law School, 1929. He was secretary to Justice Oliver Wendell Holmes, 1929-30, and practised law in Boston and New York, 1930-3. H. entered the Dept of State, 1938, and held advisory positions at international conferences, being a co-ordinator of foreign policy. In 1948 Whittaker Chambers, an ex-Communist, accused H. of turning over confidential documents to Russia. H., who had resigned from the State Dept in 1947 to head the Carnegie Endowment for International Peace, denied the charges made by Chambers, but was indicted by the grand jury for perjury. At his first trial the jury failed to reach a decision. A second trial in Jan. 1950 resulted in his being found guilty and sentenced to 5 years in prison. The case was used politically to bring discredit on the Democratic administration.

Hissar, tn of E. Punjab State, India. H. is a great centre for cattle-breeding and sales, and there is a large gov. cattle-breeding farm.

Histology, that branch of microscopic anatomy which deals with the intimate structure of the tissues. A differentiation of functions in the higher animals has led to the development of a large number of organs, each composed of various tissues. The result of minute dissociations and microscopic analyses proves that the actual number of elementary tissues, which are distinct in origin and structure, is small, though transition forms are encountered. The general enumeration is as follows: epithelium, or epithelial tissue; connective tissue (many varieties, including adipose tissue); cartilage and its varieties; bone or osseous tissue; muscular tissue, and nervous tissue, to which it is usual to add the elements suspended in the fluids of the body, viz. blood and lymph corpuscles. Many of the organs are formed wholly of one form of tissue, or show but slight admixture; other parts are much more complex in

composition, yet in some cases their uniformity of structure leads to their being described along with the elementary tissues. Examples of these are: blood and lymphatic vessels; lymphatic and secreting glands; serous, synovial, and mucous membranes; and integument— all of which are described in detail elsewhere.

Histon, vil. in Cambs, England, 3 m. from Cambridge. Noted for jam making. Pop. 2250.

Historia Augusta, a series of biographies of the Rom. emperors from Hadrian to Numerian (117-284). The identity of the author (or authors) is quite uncertain, though the work itself claims to have been written by Aelius Spartianus, Julius Capitolinus, Aelius Lampridius, Vulcatius Gallicanus, Trebellius Pollio, and Flavius Vopiscus. These, however, are most probably mere figures of fantasy. The most widely accepted view holds that the *H. A.* was written about 362 as propaganda for Julian. There is an ed. with trans. by D. Magie (Loeb Library, 3 vols.), 1922-32. See N. H. Baynes, *The Historia Augusta, Its Date and Purpose*, 1926.

Historical Manuscripts Commission, The, royal commission which began to sit in 1869. Sir Thomas Duffus Hardy (1804-1878) was influential in obtaining its appointment, as he felt keenly the desirability of some systematic investigation into the collections of valuable MSS. which at present are dispersed up and down the country in the libraries of colleges, corporations, and private individuals. Under the auspices of this commission many records and appendices have been issued, 12 of which deal with the 16th-cent. MSS. in the possession of Lord Salisbury at Hatfield House. This research is valuable in giving to students what would otherwise lie hidden for all time or, as has often happened, find a foreign purchaser. Similar bodies have been founded abroad since the appointment of the H. M. C.

Complementary to the work of this Commission is that of the Brit. Records Association, which is especially concerned with the principles to be followed in deciding whether to keep or destroy modern records. A very large proportion of the historical documents preserved in this country are or have been records or archives, i.e. documents accumulated in the course of organised business, social activity, or domestic affairs, by a natural process of growth, or in other words not consciously collected, and it is this natural process of growth that gives such documents their value as evidence of contemporary facts. It is said that survivals of accumulations of this kind are more numerous in England than in any other country. Such are, e.g., co. sessions records, anct endowments, and the like. It is obvious that through ignorance there is some danger of the destruction or dispersal of these records or archives, a danger supplemented by their increasing value in the sale room. The generally

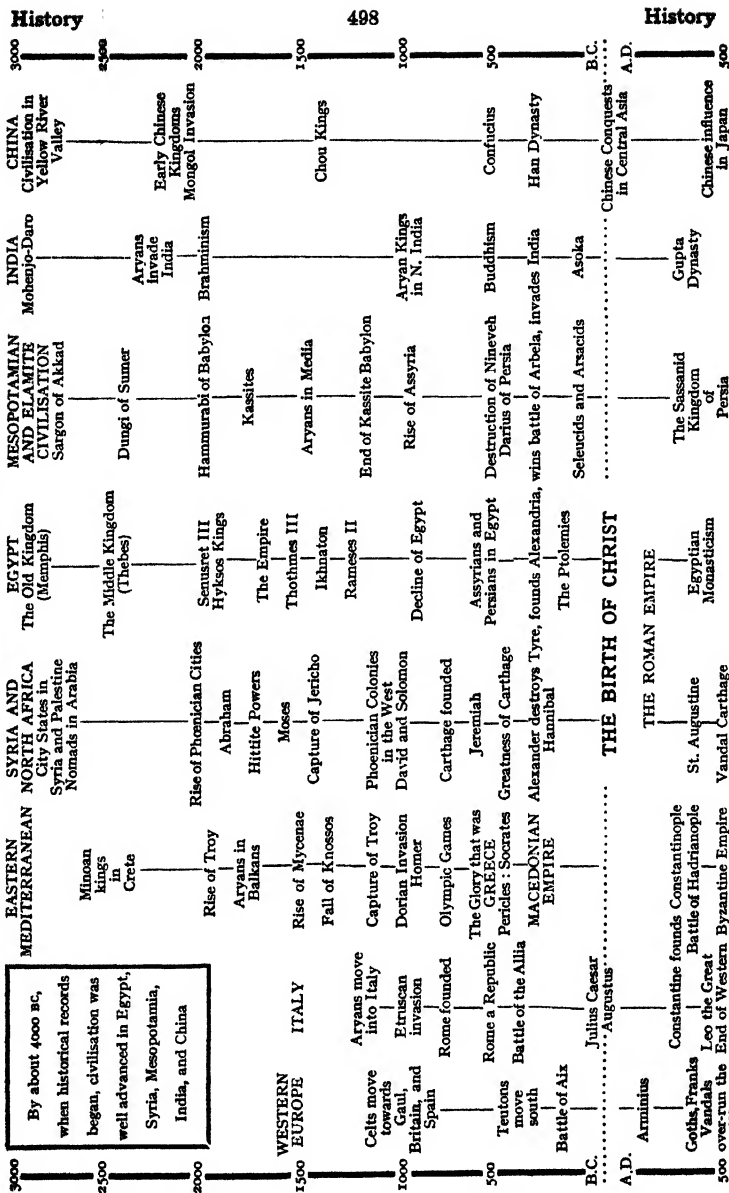
accepted classification of Eng. archives divides them into public, central, and local; semi-public; private; and eccles. The control of these archives has, however, never been centralised in England as it has in most of the greater European countries. The Public Record Office brought together, or arranged to bring together, under one authority the archives of nearly all divs. and depts of central gov.; but it estab. no relation between this authority and the local, private, and eccles. custodians or owners. Nor, generally speaking, has any Act estab. any inter-relations between these other authorities and individuals. The State has in fact intervened sporadically in regard to all the above classified categories of archives, but such intervention in other fields, notably that of Historical Monuments, has been wider and more definite. The present Royal Commission on Historical Monuments was set up in 1908 and has been at work ever since; but in its first report, 1910, it directed attention to the necessity for an executive authority, and this was set up by legislation in 1913 in the shape of an inspectorate forming part of the Office of Works. See *Proceedings of the British Records Association*.

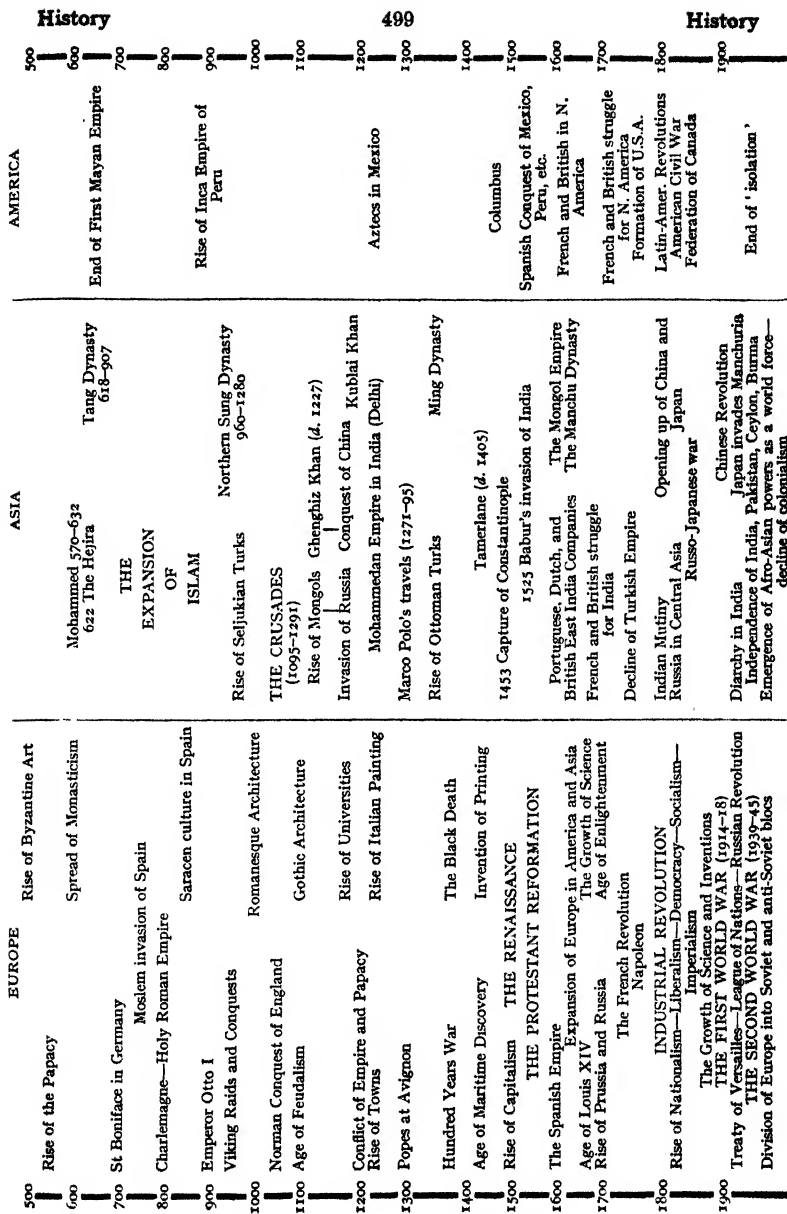
Historiographer, writer of history. The title has sometimes been given as a mark of honour by European courts to various learned historians. Thus Racine was H. to Louis XIV, Voltaire to Louis XV. The post of King's H. in Scotland was revived in the 18th cent. and still exists.

History, term briefly defined as the story of the past. The meaning of the Gk word *historia* from which it is derived is 'that which we come to know as the result of an enquiry.' H. is not therefore to be limited to a simple record of what is known or believed to have occurred. H. is more properly concerned to examine, analyse, and explain past events, particularly in human affairs, and in the words of R. G. Collingwood 'to tell man what man is by telling him what man has done.' The oral traditions of primitive peoples which are obscured by mists of legend and of miracle are not so much H. as the sources of H. The written records of more advanced peoples may similarly be but the materials of H. The anct Egyptians, the Assyrians, and the Chinese possessed extensive records, but they were never analysed or explained or assimilated into a connected narrative; records they remain. It is with the Greeks of the 5th cent. BC that H. proper begins. They developed a reasoned approach to the past, combined with an ability to analyse the causes, examine the effects, and from the result build up an account of past events. Herodotus gave his work the title of 'a history,' meaning an investigation or enquiry. It is the use of this word and its implications that makes Herodotus the father of H. He not only recounted the conflict between Greece and Persia but set out his interpretation of that conflict as a struggle between oriental autocracy and

Tables on pages 498-9.

THE FIELD OF RECORDED HISTORY





Hellenistic constitutionalism. Similarly, Thucydides in his H. of the Peloponnesian war not only described the course of the war but gave an account of the underlying causes.

Since therefore H. is concerned to analyse and explain as well as to describe the events of the past, it is impossible for it not to be coloured by the personality and mind of the historian. The most clear-sighted historian will make allowance for his personal prejudices in his writing of H., but he will also be the first to admit that H. cannot be entirely free from bias. The standard of values which the historian applies to his study of the past is determined by the general social, philosophical, religious, and economic ideas of his age, either because he is in accord with the predominant thought of his time or because he is in revolt against it. Thus the H. of the Jewish people in the books of the O.T. became primarily an account of the way of God with the world, while to the Marxist historian the story of the growth of human thought and behaviour is primarily the story of the influence and effect upon man of his economic environment. H. needs to be, as indeed it is, re-written from time to time and past events revalued in the light of fresh developments and new ideas. In addition, advances in other branches of knowledge bring to the historian new means of discovering the facts of the past and suggest to him new methods of handling his sources. The modern historian of ancient Britain has, for instance, been assisted in his knowledge of his subject by the field-work of the archaeologists and, more recently still, by the development of aerial photography, radiography, and pollen-analysis which have brought to light new facts about ancient settlements. In the 19th cent. the progress of the physical sciences and the development of the scientific method prompted the historian to use new and more critical methods of handling and classifying his material. Lastly, mention may be made of the influence on the historian of the general educational and social standards of the civilisation in which he lives. He is influenced in the style as well as in the subject matter of his work by the society for which he writes. In a society in which all classes are literate, the historian is likely to be influenced in the presentation of his material by the wide range of his potential readers.

For the modern European world the Gk and Rom. historians stand as the great originals. Herodotus and Thucydides, Livy and Tacitus regarded H. as both a science and an art. In writing down the results of their studies they accepted literary and artistic standards, but they were at pains to collect the facts and submit them to analysis. To the Greeks in particular H. had a definite value in that it led to the formation of right opinion which in their view was as necessary for the conduct of life as scientific knowledge. At the same time they did not develop in their historical thinking any conception

of an ultimate goal of human society. They were conscious of continual change in human life but not of any age-long tradition moulding it. The theory of H. which they developed was consequently one of recurring cycles.

With the rise of Christianity as the dominating theory of life the theory of H. and the writing of it changed. By the 5th cent. AD the W. Empire was overrun by the barbarians, and Rome itself had been sacked. Much of pagan literature and learning was lost, and what was still known was regarded with hostility. Human H. came to be seen as a series of events essentially conditioned by divine intervention and revelation which could ultimately guide mankind to a definite and desirable goal. This interpretation of H. was first outlined in St Augustine's *City of God*, and from the 5th to the 15th cent. it continued to be generally accepted. It gave a unity to H. since it presented all significant events as the effect of a single cause—the Will of God. Since the 'city of God' would ultimately triumph and might indeed come suddenly upon the world, what happened to the world meanwhile was of minor importance. Mainly because so few others were literate, monks were the chief (though not the only) historians of the Dark and Early Middle Ages, and the bulk of their works consisted of chronological notes (e.g. the *Anglo-Saxon Chronicle*, and the works of the Venerable Bede and Matthew Paris), while a few educ. observers, e.g. Froissart, left descriptions of local contemporary events.

With the Renaissance there was a return to the humanistic view of H. based on that of the ancients. Again it became a function of the historian to study and interpret human actions and human thought. H., after the Graeco-Rom. model, again became concerned with material values and with instruction in the art of politics and practical life. Machiavelli set himself to understand human actions, to study political history, and to explain to the Italians why things had happened as they did. From Italy the new approach to learning spread to other countries. Polydore Vergil of Urbino was commissioned by Henry VII to write the H. of England, a task which was completed in 1533 and presented to Henry VIII. At the same time, the discovery of America and the formulation of the basic principles of experimental scientific method played a part in encouraging an interest in H. While less and less could be taken for granted in a world which had felt the impact of the new discoveries, the beginnings of science suggested new critical methods of approaching the past. Thus Wm Camden in his work on the topography and archaeology of Britain reconstructed the past from data in much the same manner as the natural scientists of the time were using data as the basis of their scientific theories.

The reaction against the medieval view of the nature and H. of man was virtually complete in the 18th cent.

Hume and Voltaire estab. the belief that human life had been in the main a matter of blind and irrational forces but yet was capable of being converted into something rational. To them the Middle Ages were a period of barbarism. They consequently had little interest in any but the modern period and for this reason did little to improve the methods of historical research. Hume's *History of England* is slight and sketchy in its account of any period earlier than the Tudors, and Voltaire expressed the view that there was no reliable historical knowledge of events earlier than the 16th cent. To Gibbon also the motive force of H. lay in human irrationality, and in *The Decline and Fall of the Roman Empire* he wrote the story of what he himself described as the triumph of religion and barbarism. In the latter half of the 18th cent., however, greater emphasis was laid upon the idea that mankind was capable of a rational life, and a more scientific study was made of the advance of H. from barbarism towards reason and enlightenment. Turgot drew a distinction between natural phenomena, which remain the same for ever, and human society, where knowledge is acquired and experience transmitted. In this view the H. of mankind, despite periods of disturbance, is one of continual advancement. Condorcet also set out to show 'the successive changes in human society, the influence which each instant exerts on the succeeding instant, and thus in the successive modifications, the advance of the human species towards truth and happiness.'

The Fr. Revolution broke rudely upon the idea of progress. As a reaction from the excesses of the Revolution a new interest was taken in the Middle Ages; there was a sense of glamour in far-off times by contrast with the doubt and disturbance of the present. This historical interest was linked with the Romantic movement in literature in which it found its chief expression. It showed itself in historical scholarship, however, mainly in the work of the Ger. historians of the time, among them Mommsen, men who first directed their attention to the study of classical texts and anc. inscriptions but later extended their range to include the Middle Ages. In Germany the impulse to study medieval H. came from outside academic circles and was due in part to political motives: the medieval empire had been the archetype of Ger. unity and what Germany had once achieved she might, it was argued, achieve again. The critical methods of the Ger. historians in the examination and analysis of their sources and the solid basis of their scholarship had a great influence on the work of historians in other countries. In England up to the middle of the 19th cent. H. had been mainly regarded as a specialised branch of literature, and the greatest names of that time, for instance Macaulay and Carlyle, were those of men who were writers and men of affairs as much as they were historians. By the 1870's, however, Eng. historians were

following the method adopted by the Germans and were becoming increasingly scientific in their assessment of historical evidence. This tendency was furthered by the growing importance of H. as a subject of univ. study, and the historical writers of the time were more akin to the professional or 'professorial' historians of the 20th cent. than to their predecessors. Stubbs, for instance, wrote for scholars and students, and Maitland's work on the H. of law and institutions in England, despite the brilliance and lucidity of his style, is mainly a technical study which it is not always easy for the layman to follow. At this period a number of societies were founded for the editing and pub. of anc. legal and historical documents. In 1887 Maitland founded the Selden Society for the pub. of anc. legal records and himself ed. sev. of its pubs. As the sources of H. came to be more and more explored and knowledge was amassed, research tended to concentrate on various detailed aspects with the background of which only the expert could be familiar. H. was almost in danger of becoming a purely technical subject, and the wider function of the historian in interpreting the past to the present tended to be forgotten. Already, however, a note of revolt against the conception of H. as being concerned only with politics and constitutions had been sounded by Carlyle: 'The thing I want to see,' he wrote, 'is not Red-Book lists and Court Calendars and Parliamentary Registers, but the Life of Man in England: what men did, thought, suffered, enjoyed . . .'. The very title of John Richard Green's *Short History of the English People* is, again, indicative of a wider, more human approach to H. His work was the result of an awakening social conscience. Arnold Toynbee's *Lectures on the Industrial Revolution* reflect a similar impulse and were written under the influence of a new and wider conception of social justice. The influence of Karl Marx tended in the same direction. To Marx, H. was basically a story of the struggle between social classes created by the methods of production in use at any given time. In his view the economic structure of society was the real basis on which rested the legal and political superstructure. Relatively few historians have accepted the Marxian thesis that economic H. is the clue to all H., but the influence of Marx stimulated an interest in the economic and social approach to H.

In recent years historians, while shedding nothing of the tradition of sound scholarship and careful research inherited from the later 19th cent., have combined these qualities with a determination to examine the wider aspects of H. Among many modern scholars, Prof. G. M. Trevelyan may be quoted as one who holds the view that H. is both a science and an art, that while the discovery of historical facts should be scientific in method the exposition of them for the reader should partake of the nature of art, 'the art of written words, commonly

called literature.' Trevelyan too is among those who have embodied their learning in general works of interest to the non-specialist reader as well as to the specialist. H. becomes an aid in the philosophical interpretation of human life, and in this connection mention must be made of the great comparative study of civilisations which has been undertaken by Prof. Arnold Toynbee in his *Study of History*.

For Brit. H., see *BRITAIN, ANCIENT; BRITAIN, ROMAN HISTORY OF; ENGLISH HISTORY; GREAT BRITAIN; SCOTLAND, History; WALES, History; IRELAND, History*. See also *PREHISTORY*, and articles on the prin. countries of the world, sub-sections *History*.

See B. Croce, *The Theory and History of Historiography* (Eng. trans.), 1921; J. W. Bury, *Ancient Greek Historians*, 1929; V. G. Childe, *Man makes Himself*, 1936, and *History*, 1947; A. Toynbee, *A Study of History*, 1934-54 (abridged ed., 2 vols., by D. C. Somervell, 1946 and 1957); E. E. Kellet, *Aspects of History*, 1938; J. W. Thompson, *A History of Historical Writing*, 1942; G. M. Trevelyan, *History and the Reader*, 1945; R. G. Collingwood, *The Idea of History*, 1946; A. L. Rowse, *The Use of History*, 1946; K. B. Smellie, *Why we read History*, 1947; L. R. Gottschalk, *Understanding History*, 1950; A. Robertson, *How to read History*, 1952; K. Jaspers, *The Origin and Goal of History* (trans. M. Bullock), 1953.

Hit (anct Is), tn of Iraq, on the r.b. of the Euphrates, 100 m. WNW. of Bagdad. Camel posts started from here for Damascus. There are famous anct bitumen and naphtha pits. Pop. 5000.

Hitchcock, Alfred (1899-), film director, b. London. He entered films as a junior technician in 1920, and became a script writer, production manager, and art director at Gainsborough Studios, Islington, 1923. He became director in 1925, and has specialised in the making of 'thrillers.' His Brit. films include *Blackmail*, *The Man Who Knew Too Much*, *The 39 Steps*, *Secret Agent*, *The Lady Vanishes*, and *Jamaica Inn*. Later he went to Hollywood, and his Amer. films include *Rebecca*, *Foreign Correspondent*, *Suspicion*, *Saboteur*, *Shadow of a Doubt*, *Lifboat*, *Spellbound*, *Notorious*, *The Paradine Case*, *Rope*, *Strangers on a Train*, *Dial M for Murder*, *Rear Window*, *To Catch a Thief*, *The Trouble with Harry*, and *The Man Who Knew Too Much* (remake). He has a television show.

Hitchcock, Edward (1793-1864), Amer. geologist, started his career as a Congregationalist minister in Conway, Massachusetts, but in 1825 accepted the chair of chem. in Amherst College—a post which had been offered him largely because of his *Geology of the Connecticut Valley*, 1824. In 1841 he pub. the third and final report of his indefatigable researches into the geology and mineralogy of Massachusetts. In 1844 he became president of Amherst College, where he taught natural theology, besides his chosen science. An assiduous contributor to scientific jouns., H. strove to

popularise his subject, and also pub. in 1851 *The Religion of Geology*.

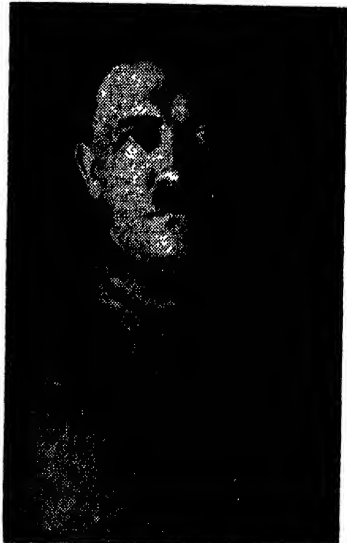
Hitchendon, see HUGHENDEN.

Hitchin, mrkt tn of Herts, England, on the R. Hiz, 32 m. NNW. of London. Girton College (Cambridge) was originally estab. here. St Mary's Church is the biggest church in Herts. It stands on a Norman foundation and has in its fabric Rom. bricks, a massive buttressed tower, and a 13th-cent. doorway. H. has associations with famous men. Here at Church House, once a school, Eugene Aram was a master. George Chapman, dramatist, poet, and translator of Homer, was b. in Tilehouse Street. In the Baptist church in the same street is a chair John Bunyan gave the minister in his day. Sir Henry Hawkins (later Lord Brampton), who as a criminal judge has had few equals, was b. at The Grange in 1817. Sir Henry Bessemer, inventor of the steel process which bears his name, was b. in 1813 at Charlton near by. H. is mainly residential, but has light industries, including parchment making, engineering, flour milling, rose growing, and lavender and pharmaceutical distilling. Pop. 20,000. See R. Hine, *History of Hitchin*, 1927-9; *Hitchin Worthies*, 1932.

Hitler, Adolf (1889-1945), Ger. dictator, b. Braunau-am-Inn, Austria, his parents being of peasant origin. His father was a minor customs officer in the Austrian service, who till late in life was known as Schicklgruber, and who married 3 times, H. being the only son of his third wife. H. went to the best school available, but his father d. when he was 14, leaving no resources for his continued educ., and for some years he lived a life of hardship. With his mother he went to Vienna hoping to become an architect, but had to earn his living as assistant to a house-painter and by selling indifferent sketches. After a few years' miserable existence in Vienna, during which period he probably first absorbed the anti-Semitic and pan-Ger. views current among extreme nationalists at the time, advocated especially by Schönerer (see PAN-GERMANISM), he left in 1912 to settle in Munich. These years of penury were formative of both his philosophy of life and of his character.

When the First World War opened H. joined a Bavarian reserve regiment. He fought in the trenches, acted as despatch rider, reached the rank of *Gefreiter* or lance-corporal, was wounded in the Somme Battle, 1916, and gassed in 1918. After the war, he convinced himself that Germany had been defeated through the treacherous and enfeebling influence of the Jews and the Marxist Socialists. Back in Bavaria while attending and, later, conducting, courses designed to keep ex-servicemen away from Bolshevism, he came under the influence of Gottfried Feder, the intellectual father of the Nazi movement. It was at this time that he began his political career. He became the seventh member of an insignificant political group in Munich, the 'German Workers' party,' and, equipped with a few definite ideas and a clear insight into

the value of the arts of propaganda, he soon distinguished himself by his almost hypnotic popular oratory. Through his friends, Röhm, a staff officer of Munich, and von Epp, he maintained close contacts with the *Reichswehr*, which were to stand him in good stead. In 1921 he ousted Drexler, the founder, and himself became leader of the party, which now styled itself the 'National Socialist German Workers' Party,' its programme being H.'s nationalist and anti-Marxist creed. Differing from Röhm as to the function of



ADOLF HITLER

E.N.A.

the newly-created *Sturm-Abteilung* troops ('Brownshirts') H. organised a special detachment to be his own political executive. This was the origin of the *Schutz-Staffel* (S.S.) or Blackshirts formally estab. in 1926 in imitation of Mussolini's organisation. In Nov. 1923, thinking that the Weimar rep. was on the verge of collapse, H. made his first attempt, in alliance with Röhm, Ludendorff, and Goering, to seize power, in the notorious *Putsch* in Munich, the intention being to make Ludendorff dictator. Two days later he was arrested and with others, including Ludendorff, tried for treason. H. was sentenced to 5 years' imprisonment and incarcerated in the fortress of Landsberg. Here he worked on the final draft of *Mein Kampf* (q.v.) with the aid of his friend Hess (q.v.). No one can understand H. who has not read this strange rambling 1000-page autobiography, philosophy and programme, with

its prolixity and bombast, its candour, its fanaticism. Meanwhile his party disintegrated. Released under an amnesty in 1924 he set work immediately to rebuild the party organisation, though for some time Strasser, creator of the Nazi party in N. Germany, was more influential than H. in the party ranks, whose strength in the Reichstag was only 12. H., however, gradually recovered the ground he had lost since the abortive *Putsch*. By 1930 he was the undisputed head of a considerable party. Funds were increasingly flowing in from the big industrialists, who saw in National Socialism (q.v.) their best safeguard against Communism. 'Nationalism' gradually superseded 'Socialism' in the party programme, though its language was still wildly revolutionary.

When the world economic crisis came in 1930 H.'s party exploited the disillusioned and discontented masses as well indeed as the more solid middle-class elements, who saw their standard of living threatened by the crisis; and in the next election, after Brüning (q.v.) had dissolved the recalcitrant Reichstag, H.'s party won 107 seats. Shortly after this he stood against Hindenburg in the presidential election and in the first ballot he barely succeeded in preventing Hindenburg from securing the necessary absolute majority. Beaten in the second ballot H. was, nevertheless, now a political power to be reckoned with. In a rapidly deteriorating political situation Brüning felt compelled to govern by decree and, though liberal in outlook, his regime paved the way to dictatorship. But in May 1932 he fell, after securing the re-election of Hindenburg as president and dissolving H.'s Brown Army. But though H. regarded himself as heir to the chancellorship, he was now baulked by the covert resistance of the old Right wing regime, with its backing of industrialists and Junkers. When von Papen became chancellor, H. remained aloof. Von Papen dissolved the Reichstag but the Nazi party doubled its strength and they and the Communists seemed to be sweeping the country. H. was now at the head of the biggest single party. When, however, Hindenburg intimated that he would not tolerate H. as chancellor, though he would admit national socialists in a coalition gov., the Nazis launched a violent campaign of opposition inside and outside Parliament. But eventually H. and von Papen reached an agreement. H. renounced the socialist section of his programme, von Papen veered round, released the subsidies from the industrialists to H.'s coffers, and induced Hindenburg to accept H. as chancellor.

Thus in Jan. 1933 began the period of the Third Reich. By the end of that year the one-party state had become the one-party state. In the elections it was only by the support of the other Right parties that the Nazis had won a majority vote. Terrorism and brutality, however, estab. H. in an unassailable position. Opponents disappeared by assassination

or into concentration camps (see BUCHENWALD). The conservatives were shouldered aside, though H. was astute enough not to offend any powerful interest. When some of his followers, wearied of Socialist and Jew-baiting, murmured against the dropping of the 'socialist' and radical elements of the Party programme, H. suddenly struck down any and all of the leaders, Nazis or reactionaries, likely to give trouble, the chief victims being Strasser, Röhm, and Schleicher and his wife. This was the 'purge' of 30 June 1934, in which a hundred National Socialists were murdered. All power now passed to the National Socialist executive, which, for all practical purposes, meant H. himself. Soon afterwards Hindenburg d. and H. was declared his successor; but he abjured the title of Reichspräsident in favour of Führer and Kanzler. Thus the mendicant adventurer of Munich now became the master of Germany.

Sure of his position in Germany by ruthless terrorism, H. now began his long campaign to restore Ger. power in Europe, heralding his advent to power by a series of increasingly grave breaches of treaty obligations and by flouting European opinion. The first need was to rearm Germany, which was done secretly at first and then ever more flagrantly. But before launching his attack on the Versailles Treaty he awaited the plebiscite on the Saar in Jan. 1935. The result, partly influenced by terrorism, was an overwhelming majority for retrocession to Germany. In Mar. he denounced the military clauses of the Treaty and introduced conscription for the *Reichswehr*. A year later he boldly risked marching his forces into the demilitarised Rhineland zone, at the same time denouncing the treaty of Locarno (q.v.), which, he claimed, had been abrogated by the Franco-Soviet Alliance. In July, when the Civil war in Spain broke out, H. seized the opportunity to test his army and air force on the side of Franco. And once again the democracies held off and weakened, while Germany waxed in strength and H. in defiant confidence, conformably with doctrines contemptuously expounded in *Mein Kampf*. H. now pursued his technique of deliberately lying so as to lull future victims into a sense of false security while hatching his aggressive schemes. He himself had once averred that the bigger the lie the better the chance of its being believed. The militarism of the Rhineland was followed by 2 years of the most active Ger. military preparations coupled with an economic reorientation aiming at autarky. Events abroad in 1936-7, such as the League's failure to check Mussolini's Abyssinian adventure, increased the nervous tension in Europe, and went far to strengthen H.'s position. Mussolini was drawn into the orbit of H.'s machinations and intrigues, and their collaboration found expression, in Sept. 1937, in the Rome-Berlin Axis (see Axis).

The end of 1937 saw Germany's course set for an expansionist foreign policy

which for 2 years won spectacular ----- H. acquired Austria by the simple process of manipulating an abrupt crisis in Austro-Ger. relations and then sending the Ger. Army across the frontier and forcibly incorporating Austria in the Reich. Mussolini, despite his apprehensions, was too cowed to make a counter-acting move. But the great test of this policy came in 1938 with the campaign for the liberation of the Sudetenland; for this was an attack on a sovereign State bound by treaty with the W. Powers and by ethnic ties with Russia (see further under CZECHOSLOVAKIA). But H. had gauged to a nicety the underlying realities of the immediate political situation. Enough for him that the goys. in the W. were not then prepared to fight. Then followed the humiliating pact of Munich (q.v.) and H. now seemed in the eyes of the average German, not only to be the preserver of peace but a consummate statesman, outtravelling all his predecessors in extending the Reich frontiers. Within less than a year he had added 10 million Germans to the Third Reich, broken the one formidable bastion to Ger. expansion SE. and made himself the most powerful dictator in Europe since Napoleon I. In the talks with Chamberlain at Berchtesgaden and Godesberg he had reiterated his stock phrase used after the rape of Austria—that he had no more territorial claims to make. Yet soon afterwards he was invading and overrunning, not merely the Ger. inhabited regions of Bohemia, but the whole of Czechoslovakia, and then himself went to Prague to proclaim yet another bloodless victory, while at the same time he announced his annexation of Memel in violation of the Versailles Treaty.

Poland was the next victim marked out for H.'s aggression. He was now claiming the retrocession of Danzig and demanding the Polish corridor and, in response to Poland's appeal, Britain and France at once guaranteed Polish independence. H. was shaken by this development, more particularly when the 2 W. Powers began negotiations with Moscow. For if he now precipitated war it would be to rouse the haunting spectre of a war on 2 fronts. But rather than abandon his cherished designs on Danzig and the corridor he preferred to swallow all that he had previously said in condemnation of the Bolshevik regime and proposed the non-aggression pact with Russia to which Stalin agreed on 23 Aug. With the removal of any probability of Soviet assistance to the W. Powers the way was clear for H.'s *Blitzkrieg* on Poland.

The first weeks of the Second World War, involving the callous conquest of Poland, illustrated H.'s cynical fiction of a defensive war against 'encirclement' or, in his own phrase, a state of neither war nor peace, a convenient fiction which left him with the initiative both on the battlefield and in the sphere of diplomacy. After the immolation of Poland, H., speaking in the Reichstag on 6 Oct. in a remarkable rhetorical outburst, made his

'last offer' to the Allies. But as a plea for peace it suffered from the not universal realisation that his word could in no circumstances be trusted. A month later he spoke at Munich in the Bürgerbräu beer cellar on the anniversary of the 1923 Putsch, announcing that he had ordered Goering to prepare for a years' war. In his New Year address for

1941, he stood upon the Brenner, prelude to the invasion of Norway and Denmark and the overrunning of the Low Countries and France.

The disastrous events of spring and summer, 1940, culminating in the armistice with Pétain (q.v.) only confirmed the average Ger. belief in H.'s genius. But after the Battle of Britain (q.v.) had been in progress for some time H. began to realise that Britain could not be conquered from the air and, having met Mussolini at the Brenner and again in Florence to concert further measures against her, he also met Franco, in Spain, probably with the object of inducing him to co-operate in the blockade of Britain. In his New Year's proclamation to the *Reichswehr* in 1941, he promised victory over Britain that year and the destruction of every nation which 'ate of democracy.' In the spring of 1941 he attacked Yugoslavia and Greece and went to join his advancing armies there, while continuing to belabour Britain with his bombers and striking under water at her seaborne supplies. H. knew that only successful invasion could bring Britain to her knees. But both H. and his military experts now feared to make the effort, and as an alternative H. in 1941 planned to attack the empire at its Achilles-heel in the East. This plan, however, depended for its success on the neutrality of Russia and, not being sure of this, H. and his advisers decided to combine the attack on Egypt with an invasion of Russia itself. This fatal decision revealed the essential weakness underlying all H.'s *Weltpolitik* and it is possible that he took it against the opposition of other Nazi leaders and against the advice of many members of the Ger. general staff. Thenceforward he strove to divide Russia from the W. Allies by harping eternally on Germany's anti-Bolshevik crusade.

The Ger. campaigns in the Balkans and the Mediterranean were brilliant in conception and execution, but Brit. intervention in Greece and Brit. resistance in Crete and Libya delayed H.'s time-table, and, as the summer of 1941 wore on it was becoming obvious that Ger. optimism had outrun itself. For some time H. was silent, but on 4 Oct. at a meeting of the Winter Help Campaign, he announced a 'gigantic operation' which would bring about the defeat of Russia. Then a few days later he boasted that he had smashed her. The final desperate assault on the Caucasus failed disastrously, and at last the voice of the critics in Germany was heard. But on 21 Dec., following the ominous failure of the *Reichswehr* before

Moscow, H. abruptly announced the dismissal of the commander-in-chief, Brauchitsch, and his own assumption of direct control of all military operations. Against further disaster he staked the legend of his own intuitive talent—a decision no doubt hastened by the entry of the U.S.A. into the war and the fact that four-fifths of the world was now ranged against Germany.

H.'s New Year message for 1942 showed a marked decline in buoyancy. At this time he was making the greatest efforts to strengthen the home front and to augment the vast numbers of foreign slave-workers driven into Germany to supply the *Reichswehr* for the spring offensive. The Ger. armies had not yet shot their bolt, and, with the Allies still far from their total war-effort, H. could hope for further success in the field and, in fact, in the earlier half of 1942, the Ger. armies in Russia reached the Volga at Stalingrad while Rommel (q.v.) in North Africa was threatening Cairo and Alexandria. Yet before the autumn was past Rommel had been routed at El Alamein and the Russians had destroyed von Paulus's Sixth Army before Stalingrad. H.'s repulse in his second thrust into the Caucasus was decisive, especially as his armies had penetrated deeply before being hurled back by a mighty Russian reaction. But the Ger. disaster of Stalingrad was even more reverberating. H. had publicly promised its capture. His strenuous attempts to make good his pledge cost Germany tremendous losses in life and material. From that time H. spoke less of Ger. victory than of the inability of the Allies to defeat Germany, and in his New Year Order of the Day for 1943 his tone indicated a more chastened Führer. For Germany's industrial potential was now being severely damaged by air attack, and the Soviet armies were pressing ever more massively on the E. Front.

But new crises soon faced him. In July 1943 his brother dictator, Mussolini, fell from power. H. tried to palliate the capitulation of Italy, which soon followed, by stressing its sabotage and weakness of will to fight and by claiming that he had for some time foreseen this result. Two months later, in Munich, at a party gathering he seemed to regain something of his old confidence. He assured his audience that however long the war might last Germany would never capitulate. 'Even at the eleventh hour,' he declared, 'Germany would not surrender; she would go on fighting past twelve o'clock.' After the Ger. armies had been driven out of Russia in a series of sweeping counter-offensives, and after the Anglo-Amer. landing in Normandy, where it soon became clear that the W. Allies would not, as H. had promised, be driven into the sea, the last remnants of a Ger. 'opposition,' led by certain generals of the *Reichswehr*, supported by industrialists, Liberals, and even elements of the Left, attempted a *coup d'état* which had obviously been long prepared. The

signal was to be the assassination of H., but the bomb which was placed in his H.Q. by a staff officer named von Stauffenberg failed in its purpose. H.'s staff were all killed or wounded. H. is said to have sustained injury to an eardrum besides possibly other injuries. The fact that he had escaped death was not known to the conspirators, who proceeded to execute their plan, but with disastrous results to themselves, for they were quickly rounded up and executed after trial before a 'People's Court.' The revolt, however, had shaken the Nazi regime to its core. On the night of 20 July H. broadcast an appeal for loyalty and discipline. When the immediate danger was past, the badly-frightened Führer instituted his last and most savage 'purge,' thousands of men and women being shot, not because they were implicated, but because they might conceivably have led another rising. At the same time Himmler (q.v.) took command of the army inside Germany so as to tighten the Nazi grip on it. As the Allies pressed into Germany from all sides H. succumbed to the pressure of great events. Obscurity shrouds his final hrs. It seems probable, however, that he and his wife, Eva Braun (whom he apparently married 29 April 1945) d. in the air-raid shelter under the ruined chancellery in Berlin on 30 April 1945—presumably by committing suicide. It is generally considered that their bodies were subsequently burned in the courtyard.

H. achieved the triumph of the Nazi party in Germany by a mixture of deceit and violence, and used the same devices to destroy other nations. From the time he became master of Germany he made lies, cruelty, and terror his prin. means to accomplish his purpose; and he became in the eyes of virtually the whole world an incarnation of absolute evil. The neurotic, who made himself leader of the Ger. race, inflamed it with his ambitions, corrupted its spirit, and finally brought upon it terrible human and material devastation. His immediate aim when he entered politics was the redemption of the Ger. people from the humiliation and consequences of defeat; but even then he was looking far ahead of this goal, to a *Herrenvolk* to be. He found in the divided and tortured state of mind of the Ger. people after the First World War the symbol and expression of his own morbid emotions and inferiority complex. He made it his lifework to identify himself with the Ger. people and, by inflaming their animosities and ambitions, to find an outlet for his own. From an intuitive understanding of the Ger. mind and psychology he elaborated theory and practice of propaganda, which, because it worked on people with obsessions similar to his own achieved startling success; and later, with Goebbels (q.v.), he developed it into a new and fearful instrument of tyranny. His resourcefulness was extraordinary, and in the art of suiting policy to necessity he had no equal. If he had cunning and ruthless

coadjutors in Goering, Himmler, Goebbels and others at his side, it was H. who had appointed them and shaped their course; it was his name which rallied Germany and his character which informed every development of Nazi policy. His lack of mental stability is now acknowledged; but the remarkable feature of his career is the way in which he was able to lead a whole nation which had, in the past, produced much of the best in Europe's philosophy and culture, on a cause which was from the outset, patently amoral, and which from 1943 onwards, was clearly leading to disaster. He possessed a hypnotic quality which is best seen in his oratory: his speeches contained little original matter, but the method of delivery quite obviously reduced his audiences to a state of delirium; and the most dispassionate foreign observers have admitted his effectiveness in this respect.

See F. Schuman, *Hitler and the Nazi Dictatorship*, 1936; E. Lips, *What Hitler did to Us*, 1938; H. Rausching, *Hitler Speaks*, 1939; *Hitler's Aims in War and Peace*, 1940; *Hitler wants the World*, 1941; A. Hitler, *Hitler Speaks*; R. C. Ensor, *Hitler's Self-disclosure in 'Mein Kampf'*, 1939; H. Trevor-Roper, *The Last Days of Hitler*, 1947; and (ed. with J. A. W. Bennett), *Hitler's Table Talk*, 1953; H. Moore and J. Barrett (ed.), *Who Killed Hitler?* 1947; Liddell Hart, *The Other Side of the Hill*, 1947; T. von Schlabrendorff, *Revolt against Hitler*, 1948; F. Meinecke, *Die deutsche Katastrophe*, 1947; A. L. C. Bullock, *Hitler: A Study in Tyranny*, 1952; T. L. Jarman, *The Rise and Fall of Nazi Germany*, 1953; and C. FitzGibbon, *The Shirt of Nessus*, 1956.

Hitopadesa, or 'Friendly Instruction,' free adaptation of the *Fables of Bidpai* (or *Pilpay*). See BIDPAI.

Hittite Language, see INDO-EUROPEAN LANGUAGES.

Hittites, anc. name of the early inhab. of Turkey and N. Syria. Their origins are obscure but the tribes included settlers from the Caucasus, c. 2300 BC. In the 3rd millennium BC they were met by Sargon (q.v.) of Agade and Naram-Sin of Babylonia, who raided S. Anatolia. Pithana and Anitta of Kussara are the first 'Hittites' who controlled the highland plateau after subduing many native city-states. The H. appear to have been influenced from Mesopotamia at this early period, perhaps by the Assyrian merchant-colonists who fl. at Kanesh (Kultepe, near Kayseri), c. 1900 BC. Before the Old Kingdom (c. 1740-1460 BC), founded by Labarna I, H. already controlled N. Palestine to the S. Hence Syro-Palestine was called 'Hatti-land.' H., also called 'sons of Heth' in the O.T. (Gen. xxiii. 3 ff.), were a significant group in Canaan. Under Hattusili I, the invader of Yamhad (Aleppo), and his son Mursili I, who raided Babylon soon after 1600 BC and brought the 1st (Hammurabi) Dynasty there to an end, the H. increased their influence throughout the Near East. Soon, however, the Hurrians (q.v.) infiltrated

into the E. part of the realm and Telepinus (c. 1525) was forced to consolidate the empire within more restricted boundaries. Treaties were made with all neighbouring states, including Syria and Cilicia (Kizzuwadna).

The main period of Hittite power (c. 1460-1190 BC) was also one of considerable struggle. Tudhaliya II sent gifts to the Egyptian Thothmes (q.v.) III who dominated Palestine as far as the Euphrates and ended the Hurrian supremacy there. He suppressed a revolt by destroying Aleppo and, when Egyptian power

Halaf) region. It provided mercenaries for the Heb. army (Ahimelech, 1 Sam. xxvi. 8; Uriah, 2 Sam. xi. 3), and even ladies for Solomon's harem about 950 BC. The expanding Assyrian provs. soon controlled the main trade-routes to the Mediterranean and into the Anatolian plain, so that with the capture of Aleppo, and later of Carchemish (q.v.), by Sargon III of Assyria in 709 BC, the H. ceased to form a distinctive kingdom and were absorbed by Assyrians, Cimmerians, and Lydians.

Apart from the O.T. the H. have been known only since AD 1870 from their monuments and inscriptions (from Alaca Hüyük and Kültepe for the Pre-Hittite period; from Yazılıkaya and Boghaz Keui—Hattusa, the H. cap.—for the Empire; and from Sinjirli, Carchemish, Halaf, Malatya, and Marshah for the Late Empire). Excavations since 1906 at Hattusa revealed many thousands of clay tablets inscribed in cuneiform (q.v.) script. In addition to the Sumerian language (q.v.) and Akkadian (see AKKAD) used for official literature the H., always a mixed group, spoke various dialects with Indo-European affinities (e.g. (*h*)anti, against; Gk *anti*). There are many tablets in these languages, Hittite, Luwian, and Palaic; other texts were written in Proto-Hittite (Hattian) or the Aryan Mitanni (akin to Sanskrit). The decipherment of Hittite was the work of many scholars following A. H. Sayce and F. Hrozny. The Hittite hieroglyphic texts, mainly inscribed on stone monuments, seals, or on a few tablets, were, however, only deciphered in 1946 by Prof. Bossert who discovered a bilingual (Hittite-hieroglyph and Phoenician) inscription at the gateway of Karatepe (q.v.) in the Taurus Mts.

There are many unsolved problems in the hist., languages, and archaeology of the H. One is the nature of their art, which has many local manifestations and is sometimes considered as 'Hurrian.' Rock-carvings of religious processions predominate. The men, of non-Semitic type, are shown as squat figures wearing a characteristic high conical hat, short tunic, and long boots with upturned toes. H. had many novel ideas in warfare, in chariotry and horse-training (a manual survives), in fortification, and in architecture, as well as in the system of gov. by a ruling warrior class. Their hist., daily life, and institutions are known from a rich literature which includes historical annals, codes of laws, religious texts (with many omens and rituals), and myths which include a version of the Gilgamesh Epic (q.v.). In this as in much of their civilisation they leaned heavily on Babylonian culture. Their pantheon consisted of a thousand gods, of which the most prominent were Teshup (a weather-god), Hepat (a sun-goddess), Telepinu (a god of the fields), Kummurpi (father of the gods), and many of more local significance, e.g. Santas.

See J. Garstang, *The Hittite Empire*, 1929; I. L. Gelb, *Hittite Hieroglyphs*, 1932; :



THE BATTLE OF KADESH BETWEEN EGYPT AND THE HITTITES

weakened on the death of Thothmes, he faced a new threat from Egypt's ally, the Mitannian Tushratta (shown in the letters found at Tell el Amarna, q.v.). Suppiluliuma (c. 1357-1335 BC) sacked the Mitanni cap., Washukhan, and by 1340 Syria was once again under Hittite control, as is shown by excavations at Ras Shamra and Alalakh (qq.v.), and finds at Aleppo and Kadesh (qq.v.). This led to friction with the Egyptians who since early times viewed the Hittite kingdom as 'abominable Kheta,' and Seti I campaigned to recover the lost Egyptian grip on Asia. Finally, in 1286 BC, Rameses (q.v.) II fought a great battle at Kadesh against Muwatili, king of the H. Both sides claimed victory, the H. gaining the advantage. In the face of the increasing power of Assyria they sealed the peace treaty by the marriage of Rameses with a Hittite princess. The reign of Hattusili III was peaceful until the empire gradually broke up through the infiltration of the 'Sea-peoples.'

A Late or Neo-Hittite kingdom endured with varying fortune from c. 1200 to 709 BC in the Upper Euphrates-R. Habur (Tell

O. R. Gurney, *The Hittites*, 1952; M. Veyra, *Hittite Art*, 1955; J. B. Pritchard, *Ancient Near Eastern Texts Relating to the Old Testament*, 1955; Seton Lloyd, *Early Anatolia*, 1956; J. Garstang and O. Gurney, *Geography of the Hittite Empire*, 1958.

Hittori, Johann Wilhelm (1824-1814), Ger. physicist, b. Bonn. At Münster he was prof. of physics and chem. from 1852 to 1879 and director of physical laboratories from 1879 to 1889. He resigned on account of ill-health; but, having recuperated, continued his labours. In 1862 H. and Plücker discovered the influence of temp. on the spectra of substances. In 1869, H. performed experiments in relation to the passage of electricity through rarefied gases (which later led to the Crookes Tube and Röntgen Rays)—noticing, *inter alia*, the defective influence exercised by a magnet on the rays proceeding from the cathode. H. investigated allotropic forms of selenium and phosphorus—producing black crystals of the latter. He contributed many papers to Poggendorff and Wiedemann's *Annalen der Physik*. A famous one, *Über die Wanderung der Ionen während der Elektrolyse*, was trans. into Eng., 1899.

Hivites, a Canaanite tribe expelled by the Israelites entering Palestine under Joshua (Joshua xxiv. 11). They seem to have dwelt in Central Palestine; e.g. Gibeon (Joshua xi. 7) and Shechem (Gen. xxxiii. 18) were cities. The origin of the name is in doubt, some think it a scribal error for Hittite or Hurrite.

Hjörning: 1. Most N. amt in Jutland, Denmark; it includes the is. of Læsø and Hirtsholmene in the Kattegat. Dairy farming is mainly carried on. Area 1105 sq. m.; pop. 173,230.

2. Cap. of the above, an anct tn, and the commercial centre of the dist. It has 3 churches dating back to the 13th cent. Pop. 14,600.

Hlassa, see LHASSA.

Hoa Hao, armed Buddhist sect in Cochín-China (q.v.), founded in 1939 by Huynh Phu So, a Buddhist who claimed powers of prophecy. During and after the Second World War it maintained a peasant army and became a political force in Viet Nam (q.v.), having representatives in the gov. Huynh Phu So was murdered by the Viet Minh (q.v.) in Mar. 1946, but the H. H. remained in existence. In 1954 it opposed the gov. of South Viet Nam by force of arms, but was defeated in 1955, when its leaders, with the exception of Ba Cut, surrendered. Ba Cut was captured and executed in the summer of 1956. See P. Devillers, *Histoire du Viet Nam*, 1952; E. Hammer, *The Struggle for Indo-China*, 1954, with supplement, *The Struggle for Indo-China Continues*, 1955.

Hoady, Benjamin (1676-1761), Eng. divine, graduated as M.A. from Catharine Hall, Cambridge, and, after holding sev. minor livings, became in turn bishop of Bangor (1715), Hereford, Salisbury, and Winchester (1734). An eminent theological controversialist, he stoutly upheld the doctrines that the Church is subject

to the jurisdiction of the civil magistrate, and that its authority does not extend to the individual conscience. The first is expounded in his *Measures of Submission to the Civil Magistrate*, etc., and the second in his celebrated sermon on the 'Kingdom of Christ,' which gave rise to the Bangorian controversy (q.v.) and caused so great a dispute between the upper house (the bishops) and lower house (the clergy) of Convocation that this assembly was prorogued by the Crown, 1717, and met only rarely for formal business until 1847. H. anticipated many of the modern Unitarian views, and in his own day was both praised and blamed as a latitudinarian and as a rationalist. His works were ed., with a life, by J. Hoady, 1773.

Hoang-Ho, or **Hwang-Ho**, see YELLOW RIVER.

Hoar-frost adorns trees, grass, and twigs in winter, because they freely radiate their heat. The cause of its formation is as follows: On a clear night dew is deposited because after sunset the earth cools and lowers the temp. of the atmosphere in contact, until its moisture begins to condense. This it will do as soon as the temp. has fallen below that point at which the water vapour in the air is saturated. H. is thus partly made up of frozen dew and partly of ice formed from the water vapour in the atmosphere at a temp. below 32° F. or 0° C. If the dew-point is below 32° F., gardeners should screen young or delicate plants from the atmosphere, as there is every likelihood of a H.

Hoare, Samuel John Gurney, see TEMPLEWOOD, 1st VISCOUNT.

Hoare-Laval Pact, pact signed by Brit. and Fr. representatives in 1935 in the hope of settling the conflict between Italy and Abyssinia—at Abyssinia's expense. Under the Pact Abyssinia was to be called upon to surrender almost half her ter. It amounted to an unqualified reward for aggression in the public mind, and a storm of protest burst in Britain and France. Sir Samuel Hoare (foreign secretary) resigned and Baldwin declared publicly that 'these proposals are absolutely and completely dead'; Laval was dismissed from his premiership. But the mischief had been done. From that moment the heart was taken out of the League of Nations. Its moral authority disappeared. After a few months the sanctions against Italy were formally ended and the It. campaign in Abyssinia was pushed to a victorious end.

Hoarseness, condition of the voice in which the sound is diminished in intensity and purity; it is usually accompanied by a feeling of pain or undue effort in producing sounds. H. is caused by the swelling or roughness of the vocal chords, the vibration of which causes the sound which we know as voice. H. may be due to fatigue or lack of tone in the muscles and nerves controlling them, but in the majority of cases there is definite inflammation of the mucous membrane of the larynx or a growth on the vocal cords. H. is therefore usually indicative of some

form of laryngitis, and if persistent should never be neglected. Inflammation may be set up as the effect of irritating vapours or dust, or as the result of a cold extended downwards from the nose or throat; it may be induced by fatigue through excessive use of the voice, or may accompany some other disease, such as influenza. An attack of it should therefore be construed as a symptom of laryngitis.

Hoatzin, or **Hoazin**, name given to the galliform birds belonging to the family Opisthocomidae, which consists of the single genus and species, *Opisthocomus hoazin*. They are fowl-like in appearance and about the size of a pigeon; the plumage is olive with white markings, and reddish underneath; the sternum has



HOATZIN

a large patch of thick, naked skin, on which the birds generally rest. They are chiefly arboreal, nesting on low trees or shrubs, but are also able to swim and dive. The H., which ranges from Guinea to Venezuela, is also called the stink-bird, or stinking-pheasant, because of its strong, musky odour.

Hobart, cap. of Tasmania in the co. of Buckingham, 120 m. S. of Launceston on the S. shore of the is. Situated at the foot of Mt Wellington (4166 ft) amid delightful scenery, of which the bay of Sullivan's Cove is a picturesque feature, it draws many visitors from all mainland states, especially at the trout-fishing season and during the time of the Derwent regatta. Its deep and sheltered harbour on the R. Derwent can accommodate vessels of the largest tonnage afloat. Both the *Queen Mary* and the *Queen Elizabeth* have anchored there. Docks, wharves, and warehouses have been built. There are numerous saw and flour mills, iron foundries, and potteries, etc. The Australian Newsprint Mills and the Electrolytic Zinc Works are estab. in the vicinity. There are important industries dealing with the processing of small fruits, apples, and pears. H. is the see of an Anglican bishop and a Rom. Catholic

archbishop, and possesses many fine squares, parks, and buildings, among which the univ., tn hall, St David's and St Mary's Cathedral deserve especial note, and also a statue of the explorer, Franklin, who was governor here from 1837 to 1843. Here, too, are parliament buildings. Pop. 97,440. See Isabel Dick, *Wild Orchard*, 1946; F. Hurley, *Garden of Tasmania*, 1947; and C. Barrett, *Isle of Mountains*, 1948.



Australian Government

Elizabeth Street, the main shopping centre of the city, from Franklin Square. Facing the square is the Town Hall and alongside is the General Post Office

Hobart Pasha, Augustus Charles Hobart-Hampden (1822-86), admiral of the Turkish Fleet, the son of the earl of Buckinghamshire. Having won his captaincy in the Eng. Navy, he retired in 1862. As blockade-runner during the Amer. Civil war he gained considerable distinction, but his daring and strategic ability were most in evidence during his blockade of Crete at the time of the insurrection, and during the Russo-Turkish war (1878), when he cleared the Black Sea of the enemy. H. had entered the Turkish Navy in 1867.

Hobbema, Meindert (1638-1709), Dutch landscape painter, was a contemporary of Berchem, Van de Velde, and Wouwerman, who sometimes inserted animals and figures in his pictures. Save that he married, d. in poverty like Rembrandt, Hals, and Jacob Ruysdael, and was buried in the pauper section of an Amsterdam cemetery, little has survived either about

his personality or life. In England he is honoured chiefly for his 'Avenue at Middelhamnis,' 1889 (National Gallery, London), but his masterpieces are scattered over the museums of Antwerp, Brussels, Leningrad, Dresden, Rotterdam, etc. H. was content to paint his native woods and mills, hedgerows and pools, winding tracks and leafy cottages, but his manipulation of cloud and light, the truth and finish of his varied foliage, and the sympathy with which he expresses nature in her moods of tender melancholy and puritanic calm, prove him the equal of Ruysdael in all except the broadness of his range. See monographs by W. von Bode, 1917, and G. Brouhiet, 1938.

Hobbes, John Oliver, pen-name of Mrs Pearl Mary Theresa Craigie, née Richards (1867-1906), Amer. novelist, b. Chelsea, near Boston, Massachusetts, of Amer. parents who settled in London during her infancy. At the age of 19 she made an unhappy marriage, which was dissolved on her petition in 1891. Reared in an atmosphere of Nonconformity, she entered the Rom. Catholic Church in 1892, and that mystical philosophy which so pervades *The School for Saints*, 1897, and its sequel, *Robert Orange*, 1900, may have been the cause or effect of this conversion. Her positive genius for epigram is conspicuous in her first pub., *Some Emotions and a Moral*, 1891, and likewise in her *Love and the Soul Hunters*, 1902. As a dramatist she was most successful with *The Ambassador*, 1898, though as joint-author she shared in the success of *The Bishop's Move*, 1902. See biographical sketch by J. M. Richards in *The Life of John Oliver Hobbes, told in her Correspondence with her Friends*, 1911.

Ben Jonson, Descartes, and other notable figures of his age. Between 1610 and 1637 H. thrice went abroad as tutor to the Cavendish family of Hardwick; and it was during this period also that he pub. his first work, a trans. of Thucydides, 1629. His political principles were fundamentally opposed to those of the Long Parliament, and in 1640 he took refuge in France, where he remained until the end of 1651, serving for part of that time as mathematical tutor to Prince Charles, the future Charles II. In 1651 the pub. of *Leviathan* brought H. into disfavour with the Church and the exiled court. He therefore returned to England, made his submission to the council of state, and, after living for some time in London, retired to Hardwick, where he d. During these last years he wrote a trans. of the *Iliad and Odyssey*, 1676, an autobiog. in verse, 1679, and *Behemoth*, 1680. In 1660 he had been granted a pension by the king, who thereby showed that he entertained no other feelings than gratitude and respect towards his former teacher.

Hobbs, Sir John Berry ('Jack') (1882-), cricketer; b. Cambridge; eldest of 12 children of John C. Hobbs (d. 1902), professional cricketer on the ground-staff

at Fenner's. As a boy, H. first batted in Jesus College Close with choir-boys of that college. His first century was scored when he played for Ainsworth against Cambridge Liberals in 1901; and in a charity match the same year his opponents included T. Hayward, who failed to bowl him out. In 1902 he was engaged professionally at Bedford Grammar School. Through the influence of F. C. Hutt he was tried at Kennington Oval, and taken on by the Surrey Club, 23 April 1903. He played for Cambs (2nd class) in 1904; and in 1905 went into the Surrey co. team—for them he scored 155 against Essex that year. Thenceforth he was continually in the eye of the cricketing world. In 30 years of first-class cricket he made the record aggregate of 61,237 runs and 197 centuries. In 1925 he made 3024 runs, including 16 centuries. The greatest Eng. opening batsman, he shared in 166 opening partnerships exceeding 100 runs, of which 40 were with T. Hayward, 60 with A. Sandham, and 26 with H. Sutcliffe. Against Australia at Melbourne in 1911-12 he and W. Rhodes shared a partnership of 323, which is still the Eng. test record against Australia. His own highest score, 316 not out against Midx in 1926, is also the record individual score at Lord's. He made 2 separate hundreds in a match 6 times. Between 1907 and 1930 he played in 61 test matches (41 against Australia). In all tests he made 5410 runs, of which 3636 were against Australia. Knighted in the Coronation Honours, 1953. Honorary cricket member of M.C.C., 1949.

Hobby, or *Falco subtorus*, small falcon, dark grey above and mottled underneath, which visits Britain in the summer, especially the SE. cos. In length the female bird, which is somewhat larger than the male, is 14 in. Larks are its favourite prey, but it habitually feeds on insects. Falconers once trained hobbies for the hunt.

Hobgoblin, see GOBLIN.

Hobhouse, John Cam, Baron Broughton (1786-1869), Eng. statesman, educ. at Westminster School and at Trinity College, Cambridge. His friendship with Byron (q.v.) began in his undergraduate days and endured till the latter's death. He began his political career as Radical M.P. for Westminster, having been already in Newgate for a satirical pamphlet pub. anonymously. H. is traditionally said to have been the first to use the phrase 'His (Her) Majesty's Opposition.' But when in 1846 he sat in Russell's cabinet as president of the (Indian) Board of Control he was regarded as a reactionary by the younger Radicals. He was made a peer in 1851. The activities of the Gk committee in London (1823) were largely the result of his enthusiasm. See M. Joyce, *My Friend H: J. C. Hobhouse*, 1948.

Hobhouse, Leonard Trelawny (1864-1929), sociologist and philosopher; son of Reginald H., archdeacon of Bodmin. Fellow of Merton College, Oxford, 1887; assistant tutor, Corpus Christi, 1890—

fellow, 1894. On editorial staff of: *Manchester Guardian*, 1897-1902; *Tribune*, 1906-7. Secretary, Free Trade Union, 1903-5. His philosophy, a dualism called Conditional Teleology, infers a correlating principle striving towards a universal harmony that can apparently never be complete. Works include: *The Theory of Knowledge*, 1896, *Mind in Evolution*, 1901, *Democracy and Reaction*, 1904, *Morals in Evolution*, 1906, *Development and Purpose*, 1913 (largely rewritten, 1927), *The Metaphysical Theory of the State*, 1918, *The Rational Good*, 1921, *Elements of Social Justice*, 1921, and *Social Development*, 1924.

Hoboken: 1. City and seaport on the Hudson R., in the Hudson co. of New Jersey, U.S.A. To the S. and W. lies Jersey City, and across the riv. is New York, connected by ferry and tunnel. The terminus of the Delaware, Lackawanna and Western Railroad is here. It is an important station on the W. Shore railways, and is connected with many world ports. Many lines of European steamers start from here. It manufs. food products, electrical equipment, clothing, chemicals, machinery, and draughting and scientific instruments. It is the seat of the Stevens Institute of Technology. Pop. 50,676.

2. Suburb of Antwerp, Belgium. It is situated on the R. Scheldt, 3 m. SW. of the city, and has the most important ship-building yards of the country, also manufs. of silver-ware, woollen goods, and sugar, and iron foundries and breweries. Pop. 31,000.

Hobson, Thomas (1544-1630), Cambridge jobmaster, who let out horses on hire, the choice always being limited to the one next the door, the one that had been longest in, hence the saying 'Hobson's choice.' He was the subject of 2 humorous epitaphs by Milton.

Hobson-Jobson, corruption of 'Ya Hasan! Ya Hosain,' the cry of the Shiltes during the procession of Mohurram, which is part of one of the great Muslim festivals. It originated from Brit. soldiers in India, who thus colloquially described the celebration. Yule and Burnell used it as the title of their Anglo-Indian glossary, 1886.

Hoecheve, or Oocleve, Thomas (c. 1370-c. 1450), lawyer and poet, b. probably London. At the age of 20 he became a clerk in the Privy Seal Office, and held this post for over 30 years. Pensioned off in 1424, he lived at the Priory of Southwick, Hants. His best-known work is *De Regimine Principum* or *The Regimen of Princes*, 1412, written for the Prince of Wales, who later became Henry V; it is an Eng. rendering in rhyme royal of a Lat. treatise by Guido delle Colonne (q.v.) on the duties of a ruler. It contains an interesting tribute to Chaucer, whose portrait appears in the original MS. H. also wrote a curious autobiographical poem, *La Male Regle*, 1406, which tells of his moderately riotous life. Others of his works are 2 narrative poems based on tales from the *Gesta Romanorum*, *The*

Emperor Jereclaus's Wife, and *Jonathas*; a dignified poem on death, *Ars Sciendi Mori*; and various shorter pieces. H.'s works were ed. by F. J. Furnivall and I. Gollancz, 1892-1924. See H. Bennett, *Chaucer and the 15th Century*, 1947.

Hoeche, Louis Lazare (1768-97), general of the Fr. Revolution, enlisted 1784, joining the National Guard, 1792. Having repulsed the duke of York, he commanded the forces on the Moselle and drove the Austrians from Alsace, 1793. He helped to suppress the Vendean revolt, 1795-6, and then headed an expedition to Ireland, which failed owing to storms, 1796. H. won sev. victories over the Austrians again in 1797, but the armistice at Leoben checked his successes, and he d. suddenly at Wetzlar soon afterwards. See E. Guillon, *La France et l'Irlande sous le Directoire*, 1888; A. Chuquet, *Quatre Généraux de la révolution*, 1911.

Hochheim, Ger. tn in the Land of Hessen (q.v.), in the Rheingau (q.v.), near the Main, 7 m. SE. of Wiesbaden. Its vineyards are famous; Hochheimer wine is believed to have been the original 'Hock' (q.v.). Pop. 5000.

Ho Chi Minh (1892-), Vietnamese resistance leader, international Communist agent, and Communist President of North Viet Nam (q.v.). B. at Nghe-an, he travelled to France before the First World War and held sev. menial posts there. He is said to have been a kitchen boy in the Carlton Hotel, London. He pub. a revolutionary paper, *Le Paria*, in Paris under the name Nguyen Ai Quoc (Nguyen the patriot), and in 1923 went to Moscow. He served in China with Borodin and later organised Communist movements in Asia. Arrested in Hong Kong, he returned to China after his release. In 1941 he founded the Viet Minh (q.v.), which he led in the 1945-1954 war. See P. Devillers, *Histoire du Viet Nam*, 1952; J. Sainteny, *Histoire d'une Paix Manquée*, 1953; E. Hammer, *The Struggle for Indo-China*, 1954.

Höchst, W. suburb of Frankfurt-am-Main (q.v.), Germany. Tilly defeated Christian of Brunswick here in 1622.

Höchstädt, Ger. vil. in the Land of Bavaria (q.v.), near the Danube (q.v.), 57 m. NW. by W. of Munich. It was the scene of the defeat of Frederick of Hohenstaufen (see HOHENSTAUFEN) by Hermann of Luxembourg in 1081; of the defeat of the Austrians by Villars (q.v.) in 1703; and of the defeat of the Austrians by Moreau (q.v.) in 1800. The great battle of Blenheim (q.v.) in 1704 is known to the Fr. and Germans as the 'Battle of H.'

Hock, accepted name in Great Britain for the Ger. Rhine wines. It is derived from Hocheim which, curiously enough, is not on the Rhine but on its trib. the Main. Hocheimer seems to have been one of the first Rhinish wines imported here under the name of its native place, and Hockamore appears in Butler's *Hudibras*, 1678. Apart from some red wine of average quality grown at Assmannshausen and Ingelheim, the Rhine wines are white and the best are pressed from

the riesling grape. The greatest wine dist. is the Rheingau on the r. b., with such famous growths as Schloss Johannisberger, Hallgartener, Oestlicher, Hattenheimer, Erbacher, Kiedricher, Rauenthaler. Greater quantities of less superlative wine are grown in Rheinhessen on the opposite bank with Niersteiner and Oppenheimer at their head. Interesting wines which stand in body and flavour between the Rhine and Moselle wines are to be found in the Nahe valley, which meets the Rhine at Bingen, the best-

Highlands, played 12 a side, 45 min. each way, with a broad-bladed stick called a caman (as in hurling). The game resembles H., but play is both on the ground and in the air and the caman may be held in any position.

Modern H. is played on turf from Sept. to April; it owes its vogue to the formation of the Men's Hockey Association in England in 1886. The rules drawn up by the Wimbledon Club in 1883 still obtain in essentials. A H. stick shall have a flat face on its left-hand side only;



ENGLAND V. SOUTH AFRICA AT READING, 1957 (*Sport & General*)

known being Schloss Böckelheimer. S. of Worms, the Palatinate is the home of rich sweet wines such as Forster Jesuitengarten and Deidesheimer. A sparkling wine, Sekt, is also made. See H. R. Rudd, *Hocks and Moselles*, 1935; A. Langenbach, *The Wines of Germany*, 1951; S. F. Hallgarten, *Rhineland Wineland*, 1951.

Hockey (possibly derived from the 'hooked stick' with which the game is played; cf. *hoquet*, O.F. for shepherd's crook), game played with a ball or some similar object between 2 opposing sides; the stick used to propel the ball is of a curved shape, and the object is the same as in football—to score goals. The Romans had a game very similar to H., which was played on frozen ground or on the ice. In some form H. has been known to most of the N. peoples of Europe and Asia. In Scotland the game is known as 'shinty,' and in Ireland hurling (q.v.) is a national game. Shinty is a ball and stick game well known in the Scottish

there are no regulations as to length, but every stick must be of such size that it can be passed through a 2-in. ring. The head of a stick shall not be edged with or have insets or fittings of metal, nor shall there be any sharp edges or dangerous splinters; the extremity of the stick must not be cut square or pointed, but must have rounded edges. The total weight of the stick must not exceed 28 oz. or be less than 12 oz. The ball is similar to a cricket ball, either painted white or made of white leather—the inner portion being composed of cork and twine. Boots very similar to football boots are usually worn; no dangerous materials such as spikes or nails, etc., must be used. Shin-guards are, from the nature of the game, usually worn. The ground for H. is of a rectangular shape, 100 yds long and not more than 60 yds or less than 55 yds wide. The ground is marked out with white lines, of which the longer are called the side-lines and the shorter the goal-lines. Flag-posts are placed at each corner, and

at the centre of each side-line, 1 yd outside the line. The goals are in the centre of the goal-line; their dimensions are 12 ft wide by 7 ft high. The posts are 2 in. broad and not more than 3 in. in depth. Nets are attached to the posts, cross-bars, and to the ground behind the goals. No shooting at goal, from which a goal can be scored, can take place except in the striking circle, which is thus defined: in front of each goal shall be drawn a white line 4 yds long and 3 in. wide, parallel to and 16 yds from the goal-line. This line shall be continued each way 3 in. wide to meet the goal-line by quarter circles having the goal-posts as centres. The 16 yds shall be measured from the outer edge of the circle to the face of the goal-posts. The game is played between 2 teams of 11 players each. The usual formation is 5 forwards, 3 halfbacks, 2 backs, and a goal-keeper. The game is started by 1 player of each team bullying the ball in the centre of the ground, i.e. each player taps the ground between the ball and his own goal-line and his opponent's stick over the ball, performing the process 3 times, after which one of them must strike the ball and put it in play. In all bullies the 2 players who are bullying shall stand squarely facing the side-lines. A player is offside if he is nearer to his opponent's goal-line than the person who last struck or rolled the ball in, unless there be at least 3 of his opponents nearer to their own goal-line than he is. No player can be offside in his own half of the ground, nor if the ball was last touched or hit by one of his opponents. The penalty for offside is a free hit. When a player strikes at the ball no part of his stick should be raised above the shoulder, at either the beginning or the end of the stroke; the penalty for 'sticks,' as it is called, is a free hit, but in the case of breaches of the rules inside the circles by a defender, a 'penalty bully,' or a 'penalty corner,' can be awarded, according to circumstances. When a penalty bully is played all players, save the 2 taking the bully, shall remain beyond the nearer 25 yds line in the field of play until the bully is completed. When a penalty corner is awarded, the player taking it shall have a hit from any part of the goal-line he may choose, at least 10 yds from the nearest goal-post. At the moment of such hit all the defending team must be behind their own goal-line, and the attacking team, except the player taking the hit, must be outside the striking circle in the field of play. A corner differs from a penalty corner only in that the hit is taken from a point within 3 yds of the nearest corner flag. The game is in charge of 2 umpires, who each have charge of half of the field of play; if 2 umpires are not available, 1 umpire and 2 linesmen take their place. Since 1895 international matches between England, Scotland, Ireland, and Wales have been played, and England, France, Germany, Holland, Belgium, and Denmark. There is no international championship, but H. is one of the events in the Olympic Games.

Co. matches are also played, and Div. Association matches.

The rules of the game are controlled by the International Hockey Board, a body consisting of 5 representatives of the H. Association (one of whom is the chairman and another the hon. secretary), 2 representatives each of the Irish H. Union, the Welsh H. Association, and the Scottish H. Association, and 3 representatives of the Fédération Internationale de H., who normally meet to consider proposals submitted by the constituent bodies once a year. The Fédération is the body responsible for the organisation of the Olympic H. Tournament, and all countries wishing to compete must be members of that body. The H. Association and the Associations of Scotland and Wales have formed the Brit. H. Board to deal with the selection and training of the team to represent Great Britain in the Olympic Games. England won the tournament in 1908 and 1920, and since 1920 India has won at each subsequent Olympic Games. See D. S. Milford, *Hockey*, 1938; T. S. Dagg, *Hockey in Ireland*, 1945; N. F. Borrett, *Improving your Hockey*, 1950; and R. Y. Fison and R. L. Hollands, *Hockey*, 1952.

Hocking, Joseph (1860-1937), minister and novelist, b. St Stephens, Cornwall, younger brother of Silas K. H. (q.v.). Educ. at Owens College, Manchester, he became a land-surveyor in 1878, but left this profession in 1884 and was ordained as a Methodist minister. In 1887 he travelled in the Near East for a time, and on his return he became pastor of Woodford Green, Essex. His pubs. include *Jabez Easterbrook*, 1891, *Story of Andrew Fairfax*, 1893, *Fields of Fair Renown*, 1896, *The Scarlet Women*, 1899 (which caused some stir in Free Church circles), *The Purple Robe*, 1900, *The Trampled Cross*, 1907, *God and Mammon*, 1912, *The Pomp of Yesterday*, 1918, *Rosemary Carlew*, 1925, *The Eternal Challenge*, 1929, *Out of the Depths*, 1930, *The Man who Found Out*, 1933, *The Squire of Zabuloc*, 1935, and *Deep Calleth Deep*, 1936.

Hocking, Silas Kitto (1850-1935), novelist, b. St Stephen's, Cornwall, son of a mine-owner. Educ. for the ministry of the Methodist Free Church, he was ordained in 1870, and held pastorates in Liverpool, Manchester, and Southport. He made his reputation as a writer in 1878 with a story *Her Benny*, which sold over a million copies, and many others followed, most of them being very popular among readers who prefer piety to literary merit. Among his other stories, which number 90, are *Alex Green*, 1878, *The Awakening of Anthony Weir*, 1901, *Pioneers*, 1905, *The Third Man*, 1911, *When He Came to Himself*, 1915, *Watchers in the Dawn*, 1920, *The Mystery Man*, 1930, and *Gerry Storm*, 1934. *My Book of Memory*, 1923, is autobiographical.

Hocktide, formerly a popular festival in England, kept on the second Monday and Tuesday after Easter. Hock Tuesday and Michaelmas were the rent-days in

rural England. The derivation is uncertain; the term hock-day was in use by the 12th cent. The chief pastime was that of 'blinding' members of the opposite sex (men on Monday, women on Tuesday) till a small payment was made for release. The money was used for church or par. purposes. See J. Brand, *Popular Antiquities*, 1777; W. Hone, *Every-day Book*, 1, 1826.

Hodder, Matthew Henry (1830-1911), b. Staines, became a book publisher in very early manhood in the firm of Jackson, Walford, and Hodder. In 1868 he founded Hodder and Stoughton in Paternoster Row in partnership with Thomas Stoughton. H. was succeeded by his eldest grandson (Sir) Ernest Hodder-Williams, and the modern firm has ever since been directed by H.'s grandsons and great-grandsons.

Hoddesdon, urb. dist. of Herts, England, 4 m. SE. of Hertford, 1½ m. from Broxbourne and H. station. Izaak Walton used to fish here on the R. Lea. At the old Rye House (q.v.), 1 m. away, plotters met to plan the assassination of Charles II and his brother James in 1683, but the plot went astray. H. was a coaching station on the old Cambridge Road. The woodlands to the W. now form part of the London Green Belt. Pop. 10,500.

Hodeida, Hodaida, or Hodidah, fort and seaport of the Yemen, Arabia, on the E. coast of the Red Sea, 100 m. from Mocha. A harbour is to be built at Ras-el-Ketib, 10 m. away. The chief exports are coffee, skins, cotton, and some pearls, senna, myrrh, sesame, and jowari (a kind of millet). Other grains are imported. H. was bombarded and occupied by the Brit. in 1918. Pop. 30,000.

Hodges Figgis, Irish publishers and booksellers, Dublin. Founded in 1768 by John Millikin, the firm moved to Grafton Street in 1819, and was purchased in 1884 by Hodges and Smith, booksellers from College Green who specialised in Irish literature and music. Samuel Figgis became a partner in 1869 and sole owner in 1893, when his son Wm Figgis (1874-1957) joined him. The firm became publishers and booksellers to Dublin Univ., and also specialised in antiquarian books about Ireland. H. F. still prospers under the control of the Figgis family.

Hodgkin, Thomas (1798-1856), physician, b. Tottenham, London. He graduated in medicine at Edinburgh, 1823, and, returning to London, was appointed curator of the museum and demonstrator of morbid anatomy at Guy's Hospital. The enormous amount of work he put into collecting, assembling, and cataloguing specimens formed the basis of his *Lectures on the Morbid Anatomy of the Serous and Mucous Membranes*, 1836-40, one of the earliest Eng. treatises on pathology. After 10 years he unsuccessfully applied for appointment as assistant physician, and resigned to take up independent practice, which, however, he soon abandoned in order to devote himself to philanthropic work. He d. at Jaffa while travelling in the Middle E. His

most notable contribution to medicine was his description of lymphadenoma ('Hodgkin's disease') in 1832. He was a Quaker and always wore the characteristic dress of the Society of Friends. See memoir by Sir S. Wilks in *Guy's Hospital Reports*, 1878.

Hodgkin, Thomas (1831-1913), historian, b. London, of a Quaker family. After graduating at London Univ. he entered business as a banker, at the same time applying himself to historical study, and soon becoming a leading authority on the hist. of the early Middle Ages. His chief works are: *Italy and Her Invaders*, 1889, *Theodoric the Goth* (8 vols.), 1889-99, *The Dynasty of Theodosius*, 1891, *Life of Charles the Great*, 1897, and vol. 1 of *Longman's Political History of England*, 1906.

Hodgson, Brian Houghton (1800-94), orientalist, entered the East India Company's College at Haileybury, 1816. He went to India in 1818, and between 1820-44 was assistant-resident, acting-resident, and resident in Nepal. He returned to England in 1858. H. wrote valuable papers on the hist. and literature of Buddhism, and on the ethnology, languages, and zoology of Nepal and Tibet, including *Miscellaneous Essays relating to Indian Subjects*, 1880.

Hodgson, Ralph (1871-), poet, b. Yorks. He was for some time editor of *Fry's Magazine*. In 1907 he pub. a small vol. of poems, *The Last Blackbird*. In 1913, with Holbrook Jackson (q.v.), he founded the Sign of the Flying Fame for publishing broadsides and chapbooks, including some of his own poems, and in the following year he was the last recipient of the Poincaré prize, awarded by the Royal Society of Literature for 'The Bull' and 'The Song of Honour.' Both of these pieces were included in a later collection, *Poems*, 1917. *Silver Wedding*, 1941, and *The Muse and the Mastiff*, 1942, were privately printed. H.'s poems are clear and simple with an indefinable magic all their own. In 1924 he was appointed prof. of Eng. literature at the Imperial Univ. of Japan, and in his later years he lived in the U.S.A. In 1954 he was awarded the Queen's Gold Medal for Poetry.

Hodgson, Shadworth Hollway (1832-1912), metaphysician, b. Boston, Linces; educ. at Rugby, and Corpus Christi College, Cambridge. First president of Aristotelian Society, 1880-94. He had tremendous erudition, but was handicapped by an involved style of expression. He claimed to have estab. a system, without ontological assumptions, on the lines of Hume. Works include *Time and Space*, 1865, *The Philosophy of Reflection*, 1878, *The Metaphysics of Experience*, 1898.

Hodler, Ferdinand (1853-1918), Swiss painter, b. Bern, studied art at Geneva with Barthélémy Menn, and copied the old masters. He competed successfully for the decoration of the national museum at Zürich. Beginning as portrait and landscape painter, he turned to historical themes and finally evolved a decorative

and symbolic style as in his 'Regard vers L'Infini,' which made a great impression in his lifetime and has caused him to be regarded as the most distinguished of the purely Swiss school.

Hódmezővásárhely, tn of SE. Hungary, cap. of the co. of Csongrád, 95 m. SE. of Budapest (q.v.). It is near the Tisza (q.v.), and is the centre of a rich agric. dist. of the Alföld (q.v.). It has textile and machinery manufs., and woodworking factories. Pop. 51,000.

Hodograph. If a point P (see diagram) be moving in any path, and from any fixed point O a vector OP^1 be drawn parallel and proportional to the velocity of P , then the locus of P^1 is called the $H.$ of the path



of P . Let P_1 and P_2 be 2 consecutive positions of P , the time from P_1 to P_2 being very small. Then the tangents P_1T_1 and P_2T_2 at P_1 and P_2 to the path of P are the directions of motion at P_1 and P_2 . Draw OP_1^1 and OP_2^1 parallel to P_1T_1 and P_2T_2 and proportional to the velocities at P_1 and P_2 respectively. Then by the triangle of velocities $P_1^1P_2^1P_1$ represents, in magnitude and direction, the change of velocity of P during the small time, i.e. $P_1^1P_2^1$ is proportional to the acceleration of P . As P traces out its path, so P^1 traces out the $H.$ and the velocity of P^1 in the $H.$ represents, in magnitude and direction, the acceleration of P in the original curve. In particular, if P moves with a uniform velocity in a circle, P^1 describes a circle with a uniform velocity. Hence P has a constant acceleration.

Hodometer, see **PEDOMETER**.

Hodonin (Ger. *Göding*), Czechoslovak tn in the region of Gottwaldov (q.v.), on the Morava. It was the bp. of T. G. Masaryk (q.v.), and has a royal castle. Glass and sugar are manufactured. Pop. 13,200.

Hodson, Major William Stephen Raikes (1821-68), Anglo-Indian soldier, leader of

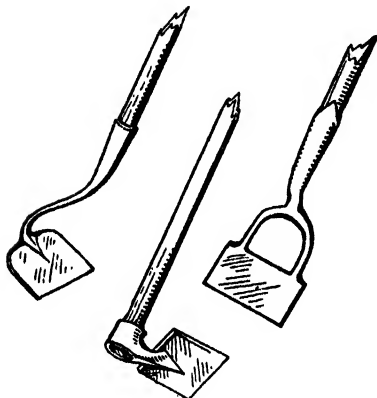
light cavalry in the Indian Mutiny, usually known as 'Hodson of Hodson's Horse.' Educ. at Rugby and Cambridge, he joined the Indian Army in 1845, fighting in the first Sikh war. Rising to be commander of the Punjab Corps of Guides, 1852, he was dismissed in 1855 for harsh administration and alleged errors in the regimental accounts. On the outbreak of the Mutiny he rode with despatches from Karnal to Meerut and back, and was allowed to raise his famous regiment of horse (Corps of Guides, Punjab Irregular Force) and became head of the Intelligence Dept. H. helped in the reduction of Delhi, and afterwards brought in Bahadur Shah, the last of the Moguls, as prisoner, but later shot down 3 princes who were his prisoners in order to overawe the mob. His conduct over this and over money matters has been severely censured, and he was even accused of 'looting.' He was killed in an attack on Lucknow. See G. Hodson, *Hodson of Hodson's Horse*, 1883; Bosworth Smith, *Life of Lord Lawrence*, app. to 6th ed., 1885; T. R. Holmes, *Four Famous Soldiers*, 1889; L. T. Trotter, *A Leader of Light Horse*, 1901; Sir C. Chamberlain, *Remarks on Captain Trotter's Biography of Major W. S. Hodson*, 1901; and B. J. Cork, *Rider of a Grey Horse*, 1958.

Hodza, Milan (1878-1944), Slovak statesman, son of a Protestant pastor, entered the Hungarian Parliament in 1905 as the sole Slovak representative. He was interned in 1914 for systematic criticism of the Hungarian gov. H. was one of the leading advocates of co-operation between the different ethnical elements in the Czechoslovak state, of which he was the first diplomatic representative at Budapest. Afterwards he entered the first Czech Parliament and between 1919-1935 was successively minister of unification, agriculture, education, and, once again, agriculture. He was the champion of a policy based on Czechoslovak political support of the ideal of a commonwealth of sovereign independent Central European states, linked together by 'co-operative solidarity.' In his *Federation in Central Europe* (pub. 1942) he advocated a Federation of Danubian States for mutual protection against 'colossal neighbours.' In 1935, when the political horizon was growing black, he became prime minister. He hastened the realisation of Ruthenian home rule, which was estab. in 1937. He resigned just before the Munich Pact for he foresaw what terms would be imposed on his country. He became vice-president of the Czechoslovak State Council in London, but controversial over his foreign policy and his peasant policy of agrarian democracy widened the breach between him and Dr Benes and he preferred to migrate to the U.S.A., where he d.

Hoe, Richard Marsh (1812-86), Amer. inventor. b. New York City, son of Robert H., a mechanic. He estab. a manufactory of printing-presses, using steam to run the machinery, in New York City in conjunction with 2 brothers-in-law,

and became head of his father's firm soon after. His prin. invention was the printing-machine known as the H. rotary or 'lightning' press, patented in 1846.

Hoe (Fr. *houe*, modern Ger., *Haue*), implement used in gardening and agriculture for extirpating weeds, singling out root crops, stirring the surface-soil, and such-like purposes. The ordinary garden H. has a flat blade set transversely in a long wooden handle, and the best one for agric. purposes is the swan-neck H., having a long curved neck joining the blade to the handle. There is also the Dutch or thrust H., with the blade fixed into the handle as in a spade. Besides



Swan-necked Hoe, Draw Hoe, and Dutch Hoe

these there are sev. types of horse-drawn H.s used among root and grain crops, and capable of working one or sev. rows at a time.

Hoek van Holland, see **HOOK OF HOLLAND**.

Hoenir, lesser Norse god, fair in aspect, always associated with Odin and Loki. Though spoken of by the Vanir (gods of the atmosphere), to whom he was given as hostage by the Aesir, he plays no prominent part in the triad. When consulted he always replied 'Let others advise'; so Mimir had to be sent with him to the Vanir and the gods lost their chief counsellor. He is described as Lord of the Onze, and is sometimes represented with long legs like a stork. H., with Odin and Lodhurr, gave life to the first human beings. He was the first to use the divining rod. Some identify him with Tyr (q.v.). Uhlund calls him 'the singer.' He played an important part when, after the last great battle and the destruction of the world, it rose afresh from its ashes.

Hof, Ger. tn in the *Land of Bavaria* (q.v.), on the Saale (q.v.), amid the foot-

hills of the Fichtelgebirge (q.v.), 150 m. N. of Munich. It is near the borders of the Ger. Democratic Rep. and Czechoslovakia. The tn has been almost entirely rebuilt since a disastrous fire in 1823; there are sev. interesting buildings, and a hospital founded in 1862. It has important textile and brewing industries. Pop. 60,000.

Hofel, cap. of Anhwei, China, situated in the centre of the prov., a few m. N. of Lake Chico. A trading centre of agric. products, especially rice, H. is strategically as well as commercially important. Pop. about 90,000.

Hofer, **Andreas** (1767-1810), Tirolese patriot, b. at St Leonard in the Passeller valley, where he became an inn-keeper. In 1809 he called the Tirolese to arms to expel the Fr. and Bavarians, and they responded with enthusiasm, and swept the latter out in 7 weeks, overwhelming them at Sterzing. By this victory the Austrians temporarily occupied Innsbruck. By the treaty of Schönbrunn, however, the Tirol was again ceded to Bavaria, and although H. again took up arms, he had to disband his followers and seek refuge in the mts, and he was betrayed, captured, and shot at Mantua. See lives by K. T. Heigel, 1875; and A. von Bossi-Fedrigotti, 1935.

Hoff, **J. H. Van't**, see **VAN'T HOFF**.
Höfding, **Harald** (1843-1931), Dan. philosopher, b. Copenhagen, where he was educ. He was a teacher, 1861-71; then prof. in the univ. of Copenhagen. He progressed from Kierkegaard's (q.v.) view of the separateness of Faith and Knowledge into a qualified form of Positivism. Works include: *Moderners Filosofi*, 1904, Eng. trans. 1914; *Bergson's Filosofi*, 1911. *Oplevelse og Tydning*, 1918, *Erkendelsesteori og Livsopfattelse*, 1926, *Religiøse Tanke-typer*, 1927, *Erindringer*, 1928, *Erkendelsesteoriens navnerende Stilling*, 1930.

Hoffmann, **August Heinrich**, known as **Hoffmann von Fallersleben** (1798-1874), Ger. poet and philologist, b. Fallersleben in Lüneburg. He was educ. at Göttingen and Bonn, his original intention being to study theology. He soon abandoned this for literature, and in 1830 became prof. of German at Breslau. In consequence of his pub., *Unpolitische Lieder*, 1840-1, in which was 'Deutschland, Deutschland über Alles,' he was obliged to resign his chair, and then travelled for 3 years, returning to Prussia after the 1848 revolution. He wrote: *Horae Belgicae*, 1830-62, *Geschichte des Deutschen Kirchenlieds*, 1832, *Soldatenlieder*, 1869-70, *Mein Leben* (autobiography ed. by F. Gerstenberg), 1892-4. A selection from his works was ed. by H. Benzmann, 1924. See lives by J. M. Wagner, 1869-70, and H. Reuter, 1921.

Hoffmann, **Ernst Theodor Wilhelm** (1776-1822), Ger. writer and composer, b. Königsberg. He assumed the name Amadeus in place of Wilhelm in homage to Mozart. In 1792 he entered the univ. of his native city to prepare for a legal career, and in 1795 began to practise as a jurist at Königsberg, subsequently going

to Berlin; but music interested him more than his legal duties. In 1796 he was appointed assessor at Posen; but his brilliant powers of caricature got him into trouble, and he was obliged to leave Posen. In 1804 he was transferred to Warsaw, where he made the acquaintance of Werner, but was forced to quit office in 1806, when Warsaw was occupied by the Fr. For the next 10 years he led a precarious existence, supporting himself by composing and giving music lessons. In 1816 he was appointed councillor of the Court of Appeal. Only then did he turn to literature, and in the few years that were left to him he wrote many novels of genius. Some of his shorter tales appeared in the collection *Phantasiestücke in Callots Manier*, 1814, and were followed by the gruesome novel, *Die Eliziere des Teufels*, 1815-16. Two other collections are *Nachtstücke*, 1817, and *Die Serapionsbrüder*, 1819-21, the latter of which includes pictures of Ger. life and incidents from It. and Fr. hist., as well as gruesome tales; it contains *Das Fräulein von Scudéri*, generally considered his best work. Other books of his are *Klein Zaches*, 1819, and the autobiographical *Lebensansichten des Katers Murr*, 1820-2. His fairy tales, *Der goldene Topf*, were trans. by Carlyle in *German Romance*, 1827. He also wrote an essay on Mozart's *Don Juan*, and composed an opera on Fouqué's *Undine*, 1816. Offenbach's opera, *The Tales of Hoffmann*, is founded on some of his tales. H. was one of the master novelists of Ger. Romanticism, and his works are remarkable for their humour and realism. His collected works, ed. by G. Ellinger, were pub. in 1894; his letters and diaries ed. by H. Müller, in 1812 and 1815 respectively. See studies by W. Harich, 1920; E. Kroll, 1923; K. Ochsner, 1936; W. Bergengrün, 1940.

Hofgastein, Austrian spa in the Gastein valley (q.v.). In the 16th cent. it had rich gold and silver mines. Pop. 4400.

Hofmann, August Wilhelm (1818-92), Ger. chemist, b. Giessen. He first studied law and philology at Göttingen, but later turned his attention to chem., and in 1845 was appointed director of the Royal College of Chem. in London. From 1856 to 1865 he was chemist to the Royal Mint, when he returned to Berlin as prof. of chem. and spent the rest of his life in that city. His work covered a wide range of organic chem.—his contributions to the scientific journals were mainly on this subject. He also devoted much labour to the theory of chem. types. His chief works are: *Introduction to Modern Chemistry*, 1865, *The Life-Work of Liebig*, 1876, and *Chemische Erinnerungen*, 1882. See *Memorial Lectures delivered before the Chemical Society*, 1893-1900 (London).

Hofmann, Josef Casimir (1876-), Polish pianist, b. Cracow. Pupil of his father (prof. at Warsaw Conservatory), he made his appearance before the public at the age of 6, and 3 years later made a tour of Europe, becoming a celebrated musical prodigy. He visited the U.S.A. in 1887-8, and, after studying 2 years under

Rubinstein, made his début at Dresden in 1894. H. has pub. pianoforte and other compositions. Since 1898 he has lived principally in America. Director and Dean of Curtis Institute of Music, 1926-38.

Hofmannsthal, Hugo von (1874-1929), Ger. poet and dramatist, b. Vienna of mixed Jewish, It., and Ger. ancestry. Literary success came to him early, with the pub. of 2 or 3 books of poems before he was 20. His dramas soon made him famous all over Europe, and he furnished the librettos for sev. of Richard Strauss's operas: *Elektra*, 1909, *Der Rosenkavalier*, 1911, *Ariadne auf Naxos*, 1912. His dramas are profoundly influenced by Nietzsche and Freud. His works (besides the above-mentioned libretti) include: *Gestern*, 1891, *Der Tod des Tizian*, 1892, *Der Tor und der Tod*, 1893, *Der Abenteuer und die Sängerin*, 1899, *Elektra*, 1903, *Kleine Dramen*, 1907, *Prosaische Schriften*, 1907, *Gedichte*, 1910, 1922, 1925, *Christinas Heimreise*, 1911, *Jedermann*, 1912, *Alkestis*, 1916, *Reden und Aufsätze*, 1921, *Das Salzburger Grosse Welttheater*, 1922, *Florindo*, 1923, *Der Unbestechliche*, 1923, *Deutsche Epigramme*, 1923, *Der Turm*, 1925, *Drei Erzählungen*, 1927. See studies by O. Heuschke, 1920; H. Temborius, 1932; K. J. Naef (with bibliography), 1938; E. Brecht, 1946; M. Hammelmann, *Hofmannsthal*, 1957.

Hofmeister, Wilhelm Friedrich Benedict (1824-77), Ger. botanist, b. Leipzig, where he was educ. and entered business as a music-dealer, studying botany in his spare time. In 1863 he was appointed to a professorship in Heidelberg, and 9 years later was transferred to Tübingen. In 1851 he pub. his prin. work, *Vergleichende Untersuchungen der Kennung Entfaltung und Fruchtbildung höherer Kryptogamen und der Samenbildung der Coniferen*, 1851, which stands in the first rank of books on plant-morphology.

Hofmeyr, Jan Hendrik (1845-1909), South African politician, b. and educ. Cape Town, leaving school at the age of 16 and becoming a journalist. He joined the staff of the *Volksvriend*, which he later bought and amalgamated with the *Zuid Afrikaan*, under the title of *Ons Land*. In 1879 H. entered Parliament, where he remained for sixteen years, becoming leader and spokesman of the Dutch party in the colony. In 1887 he was one of the Cape delegates to the first colonial conference held in London. Until the Jameson Raid of 1895 he was a supporter of Cecil Rhodes.

Hofmeyr, Jan Hendrik (1894-1948), South African statesman and historian. He went to Oxford as a Rhodes scholar and became principal of the univ. of Witwatersrand at the age of 25. His financial acumen attracted the attention of Gen. Smuts, and at the age of 30 he was appointed administrator of the Transvaal. In 1929 he entered Parliament as member for Johannesburg and took a leading part in the movement for the reconciliation of Gen. Smuts and Gen. Hertzog and the 'reunion' of South Africans of Brit. and Boer stock, from which the United party

originated. In the coalition gov. of 1933 he was minister for the interior, education, and public health. But his sympathies for the Bantu pop. soon made him unpopular with many of the Afrikaners. In 1936 he strongly opposed the Bill to destroy the Cape native franchise, and in 1938 he resigned in protest against the action of Herzog in appointing as a representative of native interests in the Senate a defeated colleague with no special qualifications in that respect. When the Second World War broke out H. rejoined the gov. as minister of finance. He was often called upon to deputise for Gen. Smuts and in 1943 was formally appointed deputy prime minister. In the 1948 elections his liberal attitude towards the non-European races alienated many electors, but his party supported him, and it was generally understood that he would lead it when Gen. Smuts should retire; and he remained in the forefront of the opposition to Dr Malan's policy of segregation. His *South Africa*, 1931, a hist. of the country, is instructive on native policy, the author rejecting segregation, racial fusion, and equality alike, and treating the whole problem as a question not of politics so much as economics. See T. MacDowell, *Jan Hofmeyr: Heir to Smuts*, 1948.

Hofwil, estate some 6 m. to the N. of Bern in Switzerland, which was purchased by Fellenberg in 1799 to start his agric. college. See FELLEBERG, PHILIP EMANUEL VON.

Hog. A sheep still retaining its first fleece is known as a H. in Scotland, and a hogget is a 2-year-old sheep. See also Pig.

Hog-hunting, sport which developed in India as bears, which had previously been hunted with spears, became locally extinct, and is now regarded as the premier sport of India. It is also practised in Central Europe and other parts of the world. There are sev. varieties of the Indian wild boar (*Sus indicus*), and the best boars, though of great weight, are capable of immense speed, and in the chase take advantage of every form of cover and obstacle possible, leading the mounted pursuers over the most difficult ground. When overtaken and at bay, the boar fights with great fierceness and pluck.

Hogarth, David George (1862-1927), archaeologist, explorer, geographer, and author, b. Barton-on-Humber. He was educ. at Winchester and at Magdalen College, Oxford, and explored Asia Minor 1887-94. He was director of the Brit. School at Athens, 1897-1900; and conducted excavations at Knossos and the Dictaeon Cave, 1900. In 1909 he became keeper of the Ashmolean Museum, a post he held till death. His pub. include: *Devia Cypria*, 1890, *Modern and Ancient Roads in Asia Minor*, 1892, *The Nearer East*, 1902, *The Penetration of Arabia*, 1904, *The Archaic Artemisia of Ephesus*, 1908, *Ionian and the East*, 1909, *The Ancient East*, 1914, *Carchemish I*, 1914, *The Balkans*, 1915, *Hittite Seals*, 1920, *Arabia*, 1923.

Hogarth, William (1697-1764), painter

and engraver, and founder of the Brit. School of painting, b. London. He began to draw at an early age and was apprenticed to a silver-plate engraver until he was 20, when he began to engrave for book- and print-sellers. In 1724 he pub. on his own account his plate 'Masquerades and Operas, Burlington Gate,' but he first became known as an engraver by his plates for Butler's *Hudibras*. He next turned his attention to oil-painting, perhaps studying under Sir James Thornhill (q.v.), whose daughter he married, and executing small conversation pieces from twelve to fifteen inches high. In 1731 he won a reputation by 'A Harlot's Progress,' a series of pictures in which he portrays the enticement of his



WILLIAM HOGARTH

Engraving after a self-portrait (in the National Gallery)

heroine into the paths of evil and her subsequent downfall and wretched end. This was followed in 1735 by 'A Rake's Progress,' which did not meet with equal success. 'The Fair,' or 'Southwark Fair,' depicts the carnival suppressed in 1762. In 1736 he attempted 'the great style of history-painting,' and produced on a staircase of St Bartholomew's Hospital 2 Scripture stories, 'The Pool of Bethesda' and 'The Good Samaritan,' but these did not meet with the encouragement he expected, so he again turned his attention to his former style and painted the 'Strolling Attresses dressing in a Barn,' 'The Enraged Musician,' 'The Distrest Poet,' etc. In 1745 H. had a sale by auction of his pictures, and the ticket of admission was the etching known as the 'Battle of the Pictures.' The same year his masterpiece, the 'Marriage à la Mode' (now in the Tate Gallery), appeared, which represents a variety of modern occurrences in high life, and in 1746 his portrait of 'Garrick as Richard III,' for which he received £200, as well

as that of 'Simon, Lord Lovat.' In 1747 he produced 'The Stage Coach,' and the series 'Industry and Idleness'; in 1756 'The Invasion,' and in 1784 'The Bathos,' his last work. His *The Analysis of Beauty*, 1753, made an interesting contribution to aesthetic theory. H. is principally famous as a satirist on canvas, and as such has never been surpassed. He was an excellent portrait painter and his study of the 'Shrimp Girl' (National Gallery) is a great masterpiece. Until recently little attention has been paid to H.'s drawings, some of which are in the royal collection and others in the possession of the marquess of Exeter and of which there are some 85 known and surviving examples. H. did not, it seems, make a practice of sketching from nature, nor did he usually make studies for separate figures in pictures and prints. Preparatory drafts of whole compositions form the majority of the drawings, but all show H.'s lively perception. H.'s house in Hogarth Lane, Chiswick, is now a museum where some of his works may be seen. See J. Nichols and G. Steevens, *The Genuine Works of William Hogarth*, 1817; J. B. Nichols, *Anecdotes of William Hogarth written by himself*, 1833; A. Dobson, *William Hogarth*, 1879; A. P. Oppé, *The Drawings of William Hogarth*, 1948.

Hogben, Lancelot (1895-), zoologist, educator, and writer: educ. at Trinity College, Cambridge; MacKinnon Student of the Royal Society, 1923. Between 1919 and 1930 held posts as lecturer in, or prof. of, zoology and experimental physiology. Prof. of social biology, London Univ., 1930-7; Regius Prof. of natural hist., Aberdeen Univ., 1937-41; Mason Prof. of zoology, Birmingham Univ., 1941-7. Visiting prof. to Wisconsin Univ. Pub. include *Nature and Nurture*, 1933; *Dangerous Thoughts*, 1939; *Chance and Choice*, vol. 1, 1950, vol. 2, 1955; *Science for the Citizen*, 3rd ed. 1951; *Mathematics for the Million*, 3rd ed. 1952; *Man Must Measure*, 1955; and scientific memoirs on genetics, ductless glands, and medical statistics to the Proceedings of the Royal Society and other scientific journals.

Hogg, Sir Douglas, see HAILSHAM, SIR DOUGLAS.

Hogg, James (1770-1835), called 'The Ettrick Shepherd,' poet, b. Ettrick, Selkirkshire, son of a small farmer. He was entirely self-educ., but at an early age began to compose verses, though the setting of these to paper was at first a task of great difficulty. He first appeared in print in 1800 with the patriotic song, 'Donald McDonald,' which became popular at once. Encouraged by his success, he, in the following year, pub. his *Scottish Pastorals, Poems, and Songs*. In 1802 he met Scott, and not long after became friendly with Allan Cunningham. His next pub. was *The Mountain Bard*, 1807, and in 1810 he issued *The Forest Minstrel*, which was not a financial success. Three years later appeared the admirable work, *The Queen's Wake*, and in 1816 *Madoc the Moor*. In that year he also brought out *The Poetic Mirror, or The*

Living Bards of Great Britain, a vol. of parodies of the leading poets of the day, including Scott, Coleridge, Southey, Byron, and Wordsworth. Among his subsequent books are: *The Brownie of Bodbeck, and other Tales*, 1817, *The Jacobite Relics of Scotland*, 1819, *Winter Evening Tales*, 1820, *The Private Memories and Confessions of a Justified Sinner* (a work of genius, anticipating the psychological 'thrillers' of the 20th cent.), anonymously, 1824, and *Queen Hynde* (a poem), 1826. He contributed to *Blackwood's Magazine* many articles, some of which he collected in 1829 under the title of the *Shepherd's Calendar*; and in 1834, to the great annoyance of Lockhart, he printed *The Domestic Manners and Private Life of Sir Walter Scott*, a book that is now too seldom read. H. has been described as the greatest poet, after Burns, that has ever sprung from the common people, and it is certain that he attained to very great heights when dealing with local or legendary stories, while his gift of imagination was such as rightly to be entitled genius. Much of his work was mediocre, but he had in a great degree the lyrical gift, and his poems, 'When the Kye Come Hame' and 'Flora MacDonald's Farewell' are exquisite. H. wrote an autobiography. See M. G. Garden, *Memorials of James Hogg*, 1885; H. T. Stephenson, *The Ettrick Shepherd: a Biography*, 1922; E. C. Batho, *The Ettrick Shepherd*, 1927.

Hogg, Quintin (1845-1903), philanthropist, 7th son of Sir James Weir H., b. London and educ. at Eton. In 1863 he entered business, first with a firm of tea merchants and later with sugar merchants. Philanthropy, however, was the main concern of his life, and in 1864 he started a ragged school for boys. In 1881 H. purchased the Royal Polytechnic Institution in Regent Street and reopened it as the Polytechnic in 1882 to provide young men and women of the lower middle classes with instruction, recreation, and social intercourse, thus successfully initiating the polytechnic movement in London. He organised cheap holiday tours for members to many parts of the world, and also helped to obtain employment for them. In 1902, on H.'s suggestion, the gov. authorised metropolitan boards to establish labour bureaux at the public expense. A bronze group statue outside the Polytechnic commemorates him. See memoir by his sister, Ethel M. Wood, revised ed., 1932.

Hogg, Quintin McGarel, see HAILSHAM, 2nd VISCOUNT.

Hogg, Thomas Jefferson (1792-1862), biographer, b. Norton, Durham, and educ. at Durham Grammar School and Univ. College, Oxford, where he made the acquaintance of Shelley (q.v.) whose life-long friend and biographer he became. Associated with Shelley in the famous pamphlet on *The Necessity of Atheism*, he shared in the expulsion from the univ. which it entailed, and thereafter devoted himself to the law, being called to the Bar in 1817. In 1832 he contributed to

Buher's New Monthly Magazine his *Reminiscences of Shelley*, which was much admired. H. was then commissioned to write a biography of the poet, of which the first 2 vols., pub. in 1858, gave such offence that the material with which he had been entrusted was withdrawn, and the work remained unfinished. See W. S. Scott, *The Athenians: Correspondence between Hogg and his friends*, 1943.

Hogget, see HOG.

Hogland, see SUURSAARI.

Hogmanay, name applied in Scotland and a few parts of England to the last day of the year, viz. 31 Dec. It is also used for the cake given to the children who beg for gifts on the morning of that day. H. marks the beginning of New Year holiday festivities in Scotland.

Hognose, North Amer. colubrine snake (genus *Heterodon*) with a flattened head and a snout like hog's. It is not poisonous.

Hog's Back, range of chalk hills, 500 ft high, which extends from Guildford to Farnham, Surrey, England. It is traversed by an old coach road which affords a splendid view of the surrounding country.

Hogshead, see METROLOGY.

Hogue, or **Hougue**, La, roadstead on the E. side of the N. part of Cotentin Peninsula, France, dept. Manche, off a rocky and dangerous coast. Gives its name to the naval victory of the Eng. and Dutch over the Fr. in 1692. It must be distinguished from Cap de la Hague (q.v.).

Hohenelbe, see VRCHLABI.

Hohenfriedeberg (Polish Dobromierz), tn of Poland, in Wrocław prov., 40 m. WSW. of Wrocław (q.v.). It was formerly in Lower Silesia. In 1745 the Prussians under Frederick II (q.v.) defeated the Austrians and the Saxons here. Pop. 7000.

Hohenheim, Philippus Aureolus Theophrastus Bombastus von, see PARACELSUS.

Hohenlinden, Ger. vil. in the *Land* of Bavaria (q.v.), 20 m. E. of Munich (q.v.). It is famous as the scene of a defeat of the Austrians by the Fr. and Bavarians under Moreau (q.v.) in 1800. The battle is the subject of a well-known poem by Thomas Campbell (q.v.).

Hohenlohe, former Ger. principality in Franconia (q.v.), now mainly part of NE. Baden-Württemberg (q.v.).

Hohenlohe-Schillingsfürst, Chlodwig Karl Viktor, Prince of (1819-1901), Ger. statesman, b. Ragaz. During the Franco-Prussian war he advocated the alliance between Bavaria and Prussia. In 1873 he was appointed, by Bismarck, Ger. ambas. in Paris, and in 1885 became governor of Alsace-Lorraine; he was imperial chancellor in 1894, and led the active Ger. colonial policy. He resigned in 1900.

Hohensalza, see INOWROCLAW.

Hohenstaufen, Ger. princely house, members of which were holy Rom. emperors from 1138 to 1254. The earliest known member of the family was Frederick von Buren, who d. at the end of the 11th cent. His son, Frederick, built

a castle at Staufen or H., and called himself by this name. He was a supporter of the Emperor Henry IV, who gave him the duchy of Swabia, and when Henry was absent in Italy acted as vice-regent. In 1105 he was succeeded by his son Frederick II, the one-eyed, who, together with his brother Conrad, held SW. Germany for their uncle, the Emperor Henry V. On the death of Henry in 1125, his estates fell to Frederick, but Lothaire the Saxon being chosen emperor, a war broke out which ended in the submission of Frederick. In 1138 Conrad was elected emperor of Germany as Conrad III, and was succeeded by his nephew, Frederick Barbarossa, in 1152. Other emperors of this family were Henry VI (1190-7), Philip I (1197-1208), Frederick II (1212-50), and Conrad IV (1250-54), the male line becoming extinct in 1268, when Conradin was put to death in Italy by Charles of Anjou. See HOLY ROMAN EMPIRE.

Hohenstein-Ernstthal, Ger. tn in the dist. of Karl-Marx-Stadt, 10 m. W. of Karl-Marx-Stadt (q.v.). It is in a coal-mining dist. and has textile manufs. Pop. 20,000.

Hohenzollern, Ger. imperial dynasty, which traced its origin back to the 9th cent. to one Count Tassilo, who built a castle at Zollern in Swabia. A descendant of his, Frederick III, married Sophia, daughter of Conrad, burgrave of Nuremberg, succeeding his father-in-law as burgrave in 1191. When he d. about 1227 his sons Conrad and Frederick succeeded him, Conrad becoming burgrave of Nuremberg and founding the Franconian branch of the family, while Frederick received the co. of Zollern, and became the ancestor of the Swabian branch. On the death of Conrad, his son Burgrave Frederick III was the representative of the Franconian branch, and he took a prominent part in Ger. affairs, helping to secure the election of Rudolph of Hapsburg as Ger. emperor in 1273. In 1415 Burgrave Frederick, the son of Frederick V, received Brandenburg from the Emperor Sigismund, becoming margrave of Brandenburg as Frederick I, and in 1701 the elector of Brandenburg, Frederick III, became king of Prussia. In 1871 Wm, the 7th king, took the title of Ger. Emperor. The Swabian line was divided in 1576 into the branches of Hechingen and Sigmaringen. These continued unbroken until 1849, when they fell into the hands of Prussia. The proposal to raise Prince Leopold of H.-Sigmaringen (1835-1905) to the Sp. throne in 1870 was the immediate cause of the war between Germany and France (see FRANCO-PRUSSIAN WAR). Prince Charles of H.-Sigmaringen became king of Rumania in 1881. The H. reached the acme of their power after the estab. of the united Ger. Empire following Bismarck's wars of 1864, 1866, and 1870-1. After the military collapse of Germany in 1918, Wilhelm II (d. 1941) fled to the Netherlands, and the H. dynasty in Germany came to an end. But the Sigmaringen

branch continued on the Rumanian throne until the abdication of Michael I (q.v.) in 1947. See H. Eulenburg, *The Hohenzollerns* (Eng. trans.), 1929.

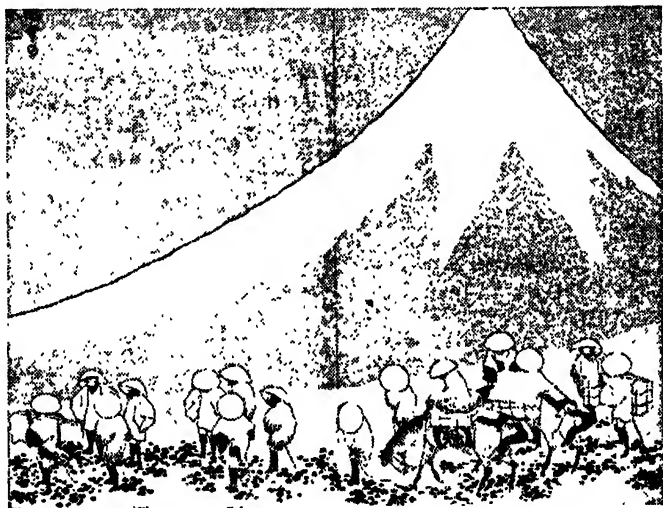
Hohenzollern, former Prussian prov., now part of the Land of Baden-Württemberg (q.v.). It formed an enclave in the ter. of Württemberg (q.v.), stretching SE. from the Black Forest and watered by the Neckar and the Danube. It consisted of the united principalities of H.-Hechingen and H.-Sigmaringen, and was ceded to Prussia in 1849. Area 441 sq. m. Cap. Sigmaringen (q.v.).

factory, as the Brit. alone had 50,000 casualties and reaped few advantages.

Holists, see Lifer.

Hokitika, tn in New Zealand, South Is., cap. of Westland co., on the W. coast about 24 m. S. of Greymouth. It is noted for its gold-mining, but brewing and tanning are also carried on, and there are saw-mills and door factories. It is a tourist centre for visitors to the S. Westland glaciers—Franz Josef and Fox. Pop. 3032.

Hokkaido (Yezo) (*Hoku*, north, *kai*, sea, and *do*, road), N. Is. of Japan, separated



ONE OF THE FAMOUS VIEWS OF MOUNT FUJI BY HOKUSAI

Hohenzollern Redoubt, very strong tactical point in the Ger. line during the First World War, situated just SW. of La Bassée. During the battle of Loos in the autumn of 1915 the Brit. operations included the attack against the H. R. Fighting here was of the most desperate nature and lasted from 27 Sept. to 13 Oct. At the first onslaught the Brit. gained it, but Ger. counter-attacks were at once launched against it incessantly, and a saw-saw situation ensued into the first week of Oct. The fiercest fighting raged round the trenches named 'Big Willie' and 'Little Willie,' in allusion to the Kaiser and his son the Crown Prince. On 3 Oct. the Germans regained most of the position and on the 8th they launched an attack against both Brit. and Fr., which was repulsed heavily. A final Brit. assault was made by a div. of Territorials on 13 Oct., which at certain places carried the line beyond the redoubt. The results of this offensive were unsatis-

factory on the N. from Sakhalin Is. by the La Perouse Strait and on the S. from Honshu by the Tsugaru Strait. Pop. 4,770,000. It is important for its crops and dairy products, abundant fish of immense variety, timber, pulp and paper, minerals and coal. The first 5-year plan was completed in 1952, and the second in 1957.

Manufactured products are sugar, beer, dairy products, tinned fish, plywood, chemical fertiliser, and cement. H. is divided into 10 dists. covering an area of 30,148 sq. m. and having 21 cities with pop. of more than 30,000 each. The central gov. is in Sapporo (pop. 427,000).

Hokusai, Katsuhika (Nakajima Tetsujiro) (1760-1849), Jap. painter, book illustrator, and teacher of drawing, b. Tokyo of an artisan family. Practised early as a wood-engraver, then studied with Shunsho, a well-known painter and designer of colour prints; but he had to leave the studio because of his independ-

ent views on style, and for a long time lived in poverty. H. is now recognised not only as the leading representative of the Ukiyo-e or popular school but as one of the world's great artists. His knowledge of technique and his draughtsmanship were alike extraordinary and his drawings and colour prints had considerable influence on art in foreign countries. His qualities are shown to great advantage in his 'River Bridge,' which strongly influenced Whistler's interpretation of moonlight effects. He devoted himself for the most part to the illustration of books in series and to industrial art as well as the teaching of drawing. His very many works include, particularly, the *Manga* or *Ten Thousand Sketches*, a pictorial encyclopaedia of all aspects of Jap. life (in 15 vols.; last pub. in 1836); and the *Hundred Views of Mount Fuji*, 1835 (3 vols. in monochrome). His colour prints, *Thirty Six Views of Fujiyama*, prove him a master of colour, his combination of greens, blues, and yellows being a striking innovation. Other notable works are 'The Wave' (Sir Edmund Walker Allerton, Royal Ontario Museum), 'Views of Famous Bridges,' 'Waterfalls,' 'Views of Lu-chu Islands.' See works on H. by M. Revon, 1896; E. de Goncourt, 1896; C. J. Holmes, 2nd ed. 1900; F. Perzyski, 1904; E. F. Strange, 1906; J. Hillier, 1955; also N. Brown, *Block Printing and Book Illustration in Japan*, 1924.

Holacanthus, name of a genus of teleostean fishes belonging to the family Pomacanthidae. The species are marine and are particularly abundant near volcanic rocks and coral is. They are remarkable for their beautiful colouring, *H. imperator*, a native of the East Indies, being deep blue with bands of orange. The flesh is highly esteemed as diet.

Holbach, Paul Heinrich Dietrich, Baron d' (1723-89), Fr. philosopher, b. Heidelberg in the Palatinate. He spent most of his time in Paris, and, having great wealth and being of hospitable disposition, entertained and was intimate with the most distinguished men of his day, among them, Diderot, Grimm, Hume, Garrick, Wilkes, Sterne, and Rousseau. He wrote a large number of articles on chem. and mineralogy for the *Encyclopédie*, and in 1767 pub. his *Christianisme dévoilé*, in which he attacks Christianity and religion. In 1770 his famous book, *Le Systeme de la Nature*, appeared, in which he denied the existence of God, explained sensibility and intellect as functions of matter, and asserted that happiness is the end of mankind. The book evoked much criticism, and was answered by Frederick the Great and Voltaire. In philosophy H. was a follower of Diderot, and his portrait appears in the character of the virtuous atheist Wolmar of the *Nouvelle Héloïse* of Rousseau. See W. H. Wickwar, *Baron d'Holbach: A Prelude to the French Revolution*, 1935.

Holbaek: 1. Amt in NW. Zealand, Denmark, on the Cattegat and the Great Belt; it includes the is. of Samø, Sejere,

and Neksele. There is mainly dairy farming. Area 676 sq. m.; pop. 127,130.

2. Cap. of the above, 35 m. W. of Copenhagen, on the H. Fjord. It is an old mkt tn and has a modern harbour. There are iron foundries. Pop. 15,150.

Holbeach, anct mkt tn of Lincs, England, 8 m. E. of Spalding. It was once on the shore of the Wash, but is now 6 m. inland. H. is the bp. of the anti-quary, Wm Stukeley. Pop. 6100.

Holbein, Hans (c. 1465-1524), the Elder, Ger. painter, was a native of Augsburg. His early works bear the impress of the schools of Van der Weyden and Memlinc, while his later pieces, e.g. the 'Basilica of St Paul' (1502) in the gallery of Augsburg, show Flem. influence. He was a prolific artist, and devoted his energy mainly to religious subjects, his crowning work being the altar-piece of St Sebastian in Munich with the picture of the Annunciation, and the graceful figures of St Barbara and St Elizabeth on the wings. See monograph by C. Glaser, 1908.

Holbein, Hans (1497-1543), the Younger, great Ger. painter, b. Augsburg. Little is known of his early years, but in 1515 he went to Basel with his brother Ambrosius, and while there drew illustrations for Erasmus's *Praise of Folly*, which were as popular as the work itself. Besides this he painted the portraits of the burgo-master, Jacob Meyer, and his wife, and the exquisite skill of the artist is shown in the elaboration of every detail in the rich embroidery of the latter's attire. In 1517 he was in Luzern, and was employed by the mayor of Luzern to decorate his house with wall-paintings, but he soon returned to Basel, and executed in 1519 the portrait of Bonifacius Amerbach, which is one of the most perfect of his works. Here, too, he was greatly occupied with mural decoration, his celebrated 'Peasants' Dance' being a wall-painting on a house at the corner of the Eisengasse. He also decorated the tn hall, and executed many original designs for glass paintings, as well as for woodcuts, among which his book entitled the *Dance of Death* is the most famous. This series is most original, and represents every class of humanity terrified by Death. He also designed a title page for More's *Utopia*, as well as for Luther's Ger. trans. of the N.T. Of his sacred pictures the most celebrated perhaps are the 'Solothurn Madonna' and the 'Meyer Madonna.' The former was only discovered in the middle of the 19th cent. But marvellous as H.'s murals are, his fame in his own day rested on his portraits, and among these his portrait of Erasmus at Longford Castle is worthy of mention, as well as his portrait of himself, both of which were executed before his visit to England. In 1526 he came to London, and was introduced to Sir Thomas More, whose portrait he painted as well as that of Warham, archbishop of Canterbury, and Bishop Fisher, besides 87 portraits on tinted paper in Windsor Castle. In 1528 he produced 'The Family of Sir Thomas More,' a portrait group of which an original drawing and

copies exist, and on his return to Basel painted a lifelike picture of his own family, which is now in the museum of that tn. In 1531 he was again in London, and executed portraits of the Ger. merchants of the Steelyard, the most valuable of which is that of Jörg Gyzs (Berlin), much praised by Ruskin. In 1533 he painted 'The Ambassadors' (National Gallery). Soon after this he came under the notice of Henry VIII., and painted for him the picture containing Henry VII., Henry VIII., Jane Seymour, and Elizabeth of York. This masterpiece, noticed by van Mander, and mentioned in the account of the duke of Saxony's visit to England in



THE ABBOT AND DEATH
From 'The Dance of Death'

1613, was destroyed by fire in 1698. Besides this he painted a portrait of Jane Seymour, now in Vienna, and one of Morett in the Dresden Gallery. H. also executed designs for ornament, his drawing for the 'Jane Seymour Cup,' in the Bodleian Library at Oxford being perhaps the most beautiful example of this class of art in the world. In 1537, on the death of Jane Seymour, he went to Brussels to paint the young duchess of Milan, a proposed candidate for the king's hand (National Gallery), and in 1539 to Cleves to paint the Princess Anna (Louvre). Among other portraits of this period may be mentioned that of the duke of Norfolk, Martin Luther, Prince Edward, and another portrait of himself. He d. of the plague in London. The importance of H. H.'s work cannot be over-estimated; before his time the individual portrait had not been developed as a form of art, and it was he who first raised the art of painting to perfection in England. Apart from portraiture his work is superb in qualities of design. See

R. N. Wornum, *Some Account of the Life and Works of Hans Holbein*, 1867; A. Voltzmann, *Holbein und seine Zeit*, 1874-6; J. Cundall, *Hans Holbein*, 1879; A. M. Brooks, *From Holbein to Whistler: Notes on Drawings*, 1920; U. Christoffel, *Hans Holbein*, 1926; A. Chamberlain, *The Art of Holbein*, 1940; H. Koegler, *Die Bilder zum Gebetbuch Hortulus Animae*, 1943; F. Ganz, *Holbein*, 1943.

Holberg, Ludwig, Baron (1684-1754), Dan. playwright and historian, b. Bergen in Norway. He was educ. at Bergen and at the univ. of Copenhagen. In 1704 he came to England and spent 2 years amongst the libraries at Oxford, and in 1711 printed his first work, *An Introduction to the History of the Nations of Europe*. From 1714 to 1716 he travelled in Europe. On his return to Denmark he pub. his *Introduction to Natural and Popular Law*, and in 1718 became prof. of metaphysics at Copenhagen. In 1720 he was promoted to the chair of public eloquence, and in 1730 to that of hist., becoming quaestor of the univ. in 1737, and a baron in 1747. Up to about 1716 his writings had been concerned with law and hist., but after that date he began a new class of humorous literature, and his *Pedar Paars*, 1719, the earliest of the classics of the Dan. language, is a satire of the pedantic stiffness and stupidity of contemporary life and thought. In 1721 the first Dan. theatre was opened at Copenhagen, and H. produced in 1722 a Dan. trans. of *L'Avare* (before this no plays had been acted in Denmark except in Fr. and German). This was followed by numerous original comedies between 1722 and 1728, amongst which may be mentioned *Den Vægelsindede*, *Jean de France*, *Jeppe paa Bjerget*, *Jacob of Thyboe*, *Den politiske Kandestøber*, and *Henrik og Pernille*, his most famous piece (produced in 1724). After the closing of the theatre he turned his attention to historical and philosophical writings, and produced in 1726 *Metamorphosis*, a poetical satire; *Epistolae ad virum perillustrem*, 1727, *Description of Denmark and Norway*, 1729, *History of Denmark*, 1732-5, *Description of Bergen*, 1737, *Universal Church History*, 1738, *Biographies of Famous Men*, 1739-1745, *Moral Reflections*, before 1744, *A History of the Jews*. In 1741 appeared another classic in his famous poem, *Niels Klim's Subterranean Journey*, and from 1748 to 1754 *Epistles*, his last pub. work. The importance of H. cannot be over-estimated and he must be considered as the founder of modern Dan. literature. See G. Brandes, *Ludvig Holberg*, 1884; K. Mortensen, *L. Holberg*, 1925; H. Brix, *L. Holbergs Komedier*, 1942.

Holborn, smallest in area and pop. of the metropolitan bors. of London, bounded by the bors. of St Pancras and Finsbury and the cities of London and Westminster. 'Holebourne' means 'the stream in the hollow' and alludes to the upper part of the Fleet R., over which a bridge was built in early times and replaced by the viaduct built in 1867-9. H. contains interesting buildings, among them the

church of St Etheldreda in Ely Place (so called from the bishops of Ely, who held land here from the 13th cent.); the par. church of St Giles in the Fields (1734) on the site of a leper hospital founded by Matilda in 1101; Wren's church of St Andrew (burned out in 1941) which numbers Henry Sacheverell (q.v.) among its rectors; Lincoln's Inn; Gray's Inn; the half-timbered houses of Staple Inn; and the Brit. Museum. Hatton Garden, a centre of the diamond trade, abuts on the city of London. The dist. of Bloomsbury (q.v.) covers most of the bor. H. and St Pancras South return 1 member to Parliament. Area 406 ac.; pop. 23,400.

Holbrook, Norman Douglas, V.C. (1888-), naval officer, b. Southsea, son of Col. Sir Arthur R. H. When in command of submarine *H.11*, on 31 Dec. 1914, he dived under 5 rows of mines in the Dardanelles and torpedoed the *Messoudieh*, a Turkish battleship. Although fired on and pursued by anti-submarine craft he regained the parent ship without mishap. This, however, necessitated being submerged for 9 consecutive hrs. The first news the crew received on joining the parent ship was the official Turkish confirmation of the sinking of the *Messoudieh*. For this exploit he was awarded the Victoria Cross.

Holbrooke, Josef (1878-), composer, b. Croydon, son of a Bristol musician. His orchestral works include *The Raven*, 1900, *Queen Mab*, 1904, *The Bells*, 1906, *Apollo and the Seaman*, 1908. His operas include a Brit. legend trilogy: *Children of Don*, 1912, *Dylan*, 1914, and *Bronwen*, 1916, under the general title, *The Cauldron of Anwyn*, with libretti by T. E. Ellis (pen-name of Lord Howard de Walden). Other works (many on subjects from Poe) include ballets, symphonic poems, and a great deal of chamber music.

Holcroft, Thomas (1745-1809), dramatist and novelist, b. London. He was successively stable-boy, shoemaker, tutor, and actor. In 1780 he pub. his first novel, *Alwyn, or the Gentleman Comedian*, in which he describes his own experience as a strolling actor. In 1781 his first comedy, *Duplicity*, appeared, and in 1783 he visited Paris as correspondent of the *Morning Herald*. He trans. *Mariage de Figaro* from memory, and produced it at Covent Garden in 1784, himself playing the title-role. In 1792 *The Road to Ruin*, his best and most successful play, appeared, and in 1802 his musical adaptation *A Tale of Mystery*, was acted at Covent Garden. H. pub. numerous comedies and comic operas, besides novels and trans., also *Human Happiness*, a poem. He was praised by Lamb, and was intimate with Wm Godwin and Hazlitt (qq.v.), who ed. his *Memoirs*, 1816.

Holda, kindly Teutonic goddess of spinning and agriculture, prominent in fairy lore, and often depicted as making her bed when it snows, the flakes being the bed-feathers flying about.

Holden, Charles Henry (1875-), architect and tn-planner, b. Bolton, Lancs. He was articulated in Manchester, then came

to London. While assistant to H. P. Adams he won the competition for Bristol Central Library, working independently. Adams took H. into partnership (1907) and in 1913 L. G. Pearson (*d.* 1953) was made a third partner. Adams *d.* in 1930. Work done by the firm included hospitals at Bristol, Torquay, Valletta, and Istanbul; the Brit. Medical Association building, London, the head offices at St James's Park station, and many other stations for the London Underground Railways. H. was also one of the prin. architects for the Imperial War Graves Commission, 1918-22; sole architect for the great new buildings of London Univ. in Bloomsbury, 1931 onwards; and joint-author with Sir Wm Holford (q.v.) of the tn-planning report for the City of London, 1947. Awarded R.I.B.A. Royal Gold Medal, 1936.

Holden, Sir Isaac (1807-97), inventor, b. Hurlet, near Paisley. After working in a cotton-mill, he became a mathematical teacher and it was then that the idea occurred to him of applying sulphur to the explosive material that was necessary to produce instantaneous light. In 1830 he became book-keeper in the firm of Townend Brothers, worsted manufacturers, but he soon left the counting-house for the mill, and conceived the application of machine power to the various operations of wool-combing. In 1846 he became associated with Lister, and with him brought out a patent for a new method of carding and combing and preparing genappe yarns. In 1848 he opened a large fabrique at St Denis, and in 1864 concentrated his business at Bradford, which soon became the largest wool-combing concern in the world.

Holdenby House, see HOLMBY.

Hölderlin, Johann Christian Friedrich (1770-1843), Ger. poet, b. Lauffen on the Neckar. Son of the chamberlain to a monastery, he was edue. at the Tübinger Stift where he became the friend of Hegel and Schelling. He declined to enter the Church, however, and in 1801 he took up a teaching appointment at Bordeaux. In 1802 he became mentally deranged and was in an asylum at Nürtingen. Discharged in 1804 he became a librarian at Homburg but in 1806 was admitted to the Tübingen asylum. For the rest of his life he suffered from severe melancholia with brief intervals of normality. In his early years was much under the influence of Klopstock and Schiller, for whose *Neuer Thalia* he wrote the first fragments of his great novel *Hyperion*. He was also a friend of the philosopher Fichte. An enthusiast for the ideals of classical Greece as they were then understood, he trans. the *Antigone* and the *Oedipus Rex*, 1804, of Sophocles and wrote a fragment of a tragedy entitled *Empedokles*. Apart from the idealistic novel *Hyperion*, 1793-8, he wrote lyric poetry which is melodious, rich in imagery, and of great verbal dexterity, often on classical models in Gk metres. Although unrecognized in his lifetime, H. is amongst those who have made a lasting contribution to Ger.

lyricism. His *Collected Poems* were pub. in 1926, and his *Complete Works* in 1946. See W. Dilthey, *Das Erlebnis und die Dichtung*, 1906 and 1939; C. Viëtor, *Die Briefe der Dichterin*, 1921; *Die Lyrik Hölderlins*, 1921; M. Montgomery, *Hölderlin and the German Neo-Hellenic Movement*, 1923; S. Zweig, *Der Kampf mit dem Dämon*, 1925; J. Koffmeister, *Hölderlin und die Philosophie*, 1942; F. Tonnelat, *F. Hölderlin, son oeuvre poétique et sa pensée religieuse*, 1950.

Holderness, flat and fertile dist. of the E. Riding of Yorks, England, between the North Sea and the estuary of the Humber. Formerly a parl. div., H. is now included in the Bridlington div.

Holdich, Sir Thomas Hungerford (1843-1929), explorer, b. Dingley, Northants. He entered the Royal Engineers, 1862, served in the Afghan war, 1878-80, and was Superintendent Indian Frontiers Survey, 1892-8. In 1899 he was one of 3 Brit. commissioners on boundary of Chile and Argentina, and made a survey for the king's award, 1902. Pubs.: *The Indian Borderland*, 1901, *India*, 1904, *The Countries of the King's Award*, 1904, *Tibet the Mysterious*, 1906, *The Gates of India*, 1909.

Holding, in Scots law, denotes the tenure subsisting between the feu superior and his vassal. A feu-farm H. is one by the terms of which the vassal has to pay the superior a yearly rent in money or in corn. A blench H. is one under which the vassal pays a nominal yearly duty, e.g. a rose, a pair of gilt spurs, the object being merely to acknowledge the superiority.

H. is that by which burghs-royal hold lands of the sovereign specified in their charters of erection (see BURGH). The term is also commonly used to denote the subjects held, whether feudally or under a lease.

Holdsworth, Sir William (1871-1943), jurist, educ. at Dulwich and New College, Oxford, where he lectured on law from 1895 to 1897; fellow of St John's, Oxford, 1897, and taught law there for 20 years. Elected Vinerian Prof. of Eng. Law at Oxford, 1922, he was the most distinguished occupant of the chair since Blackstone. At Oxford he wrote the first 3 vols. of his work *A History of English Law*, which gave him a world-wide reputation. As Vinerian Prof. he brought out a new ed. of his hist., the first 3 vols. appearing in 1929, the 9th in 1928. Meanwhile he had written *Sources and Literature of English Law*, *An Historical Introduction to Land Law* (a lucid elementary book on a difficult subject), and many articles in legal periodicals, Eng. and American. His works, *The Historians of Anglo-American Law*, 1927, *Some Lessons from our Legal History*, 1928, and *Charles Dickens as a Legal Historian*, 1928, were the outcome of his lectures in America in 1927. On his return from America he was appointed a member of the Indian States Inquiry Committee, constituted to help the Simon Commission, and in 1928 he went out to India. He was knighted in 1929.

In 1937 he pub. 3 more vols. dealing with the public law, the enacted law, and the professional development of the law in the 18th cent. In 1938 he went out to India again, this time as Tagore Prof. at Calcutta; the result was the pub. of *Some Makers of English Law*, 1938. Order of Merit, 1943. His hist. is a great monument of learning, industry, and good sense, and in it he digested and harmonised all the results of the latest Eng., Fr., and Amer. research; the immense amount of detail in the vols. never obscures his good judgment or perspective or blinds him to general tendencies.

Holešov (Ger. Hollerschau), Czechoslovak tn in the region of Brno (q.v.). It has a textile industry. Pop. 6600.

Holford, Sir William Graham (1907-), architect and tn-planner, b. Johannesburg. Educ. Liverpool Univ., then studied in Italy and America. Prof. of Tn Planning, London Univ., 1948. Collaborated with C. H. Holden (q.v.) in preparing a plan for the City of London; also prepared a plan for Cambridge, 1950. He was knighted in 1953.

Holguín, tn in Oriente prov., Cuba, in a healthy, hilly region, 65 m. NW. of Santiago de Cuba. Sugar and tobacco centre. Pop. 35,870.

Holiday Fellowship (Ltd.), The, venture in social service founded in 1913 by T. Arthur Leonard (q.v.), whose objects are to provide for the healthy enjoyment of leisure; to encourage love of the open air; to further the interests of education and culture; to promote social and international friendship; and to organise holiday making and other activities with these objects. Starting with 2 guest houses—one in North Wales and the other in the Lake Dist.—it developed steadily, and by the summer of 1955 was providing more than 90 guest houses and centres, and coach tours, walking tours, and other forms of community holiday in various parts of Great Britain and abroad. For legal and business purposes, the H. F. is registered under the Industrial and Provident Societies Act, 1893, with registered office at 142 Great North Way, Hendon, London, NW.4.

A kindred organisation to the H. F. is the Co-operative Holidays Association, Fallowfield, Manchester.

Holidays, see BANK HOLIDAYS.

Holinshed, or **Hollingshead**, **Raphael** (c. 1520-c. 1580), Eng. chronicler, said to have been a native of Cheshire. He came to London early in Elizabeth I's reign, and was employed as a translator in Reginald Wolfe's printing-office, helping him in the compilation of his *Universal History*. Wolfe, however, d. before the work was completed, and it was left to H. to complete it in an abridged form. It appeared in 1577 as the *Chronicles of England, Scotland, and Ireland*. A second enlarged ed. was pub. in 1586, and in 1808 a reprint of the original was pub. in 6 vols. The *Chronicles* are interesting as being the chief source from which the Elizabethan dramatists drew their plots. Nearly all Shakespeare's historical plays, as well as

Macbeth, *King Lear*, and *Cymbeline*, are based on H.'s work, which is a curious mixture of fact and legend. See A. and J. Nicoll (ed.), *Holmes's Chronicles as used in Shakespeare's plays*, 1927.

Holism (from *Gk. holos*, whole), name given to the philosophy which holds that there is a fundamental factor operating in the universe towards the creation of wholes. H. embraces biology, psychology, and physics, and claims to be necessary to the proper understanding of evolution. H. is somewhat akin to the naturalistic conception of physical science, except that it begins in realism and ends in idealism. See J. C. Smuts, *Holism and Evolution*, 1926.

Holkham, vil. on the N. coast of Norfolk, England, 2 m. from Wells, and famous for its hall, built in the 18th cent. in the Palladian style. It is the seat of the earl of Leicester; the estate was bought in 1659 by John Coke, son of Sir Edward Coke, and here 'Coke of Norfolk,' the 1st earl, carried out his agric. experiments. (See LEICESTER, THOMAS WILLIAM COKE, 1ST EARL OF.) Pop. 444.

Holl, Frank (1845-88), portrait painter, b. London. He became a student at the Royal Academy schools in 1860, and from 1864 was a regular contributor to the Royal Academy. He turned from sombre subject pictures, e.g. 'Newgate—Committed for Trial' to portraiture in which he was very successful. Among his best portraits are those of the prince of Wales, the duke of Cambridge, Lord Roberts, and John Bright. R.A. 1883.

Holl, Karl (1866-1926), Ger. theologian and church-historian, b. Tübingen; assistant in Berlin Academy of Sciences, 1894; lecturer, univ. of Berlin, 1896. Prof.: Tübingen, 1900; Berlin, 1906. Rector of Berlin Univ., 1925. His *Gesammelte Aufsätze zur Kirchengeschichte*, 1927-8, has a fine study of Luther.

Holland, Henry (1745-1806), architect; son of a builder in Fulham, London, to whom he was apprenticed. In 1771 became partner to Lancelot Brown (q.v.), whose daughter he married in 1773. The firm built or altered many mansions, including Claremont, Luton Hoo, Trentham, Cardiff Castle, Himley Hall, and Nuneham Courtney. H. undertook speculative building as well as designing, especially Sloane Street and the adjoining parts of Chelsea, 1771 onwards. He became a gifted and fashionable architect, his works including the original Pavilion at Brighton, 1786-7 (see 'JOHN NASH'), and alterations to Carlton House, London, 1783-5 (demolished 1827)—both for the prince of Wales; Brooks's Club, London, 1776-8; alterations to Woburn Abbey, also sev. inns in Beds, all for the duke of Bedford; Southill House, Beds, 1795; alterations to Dover House, Whitehall; etc. See biography by D. Stroud, 1950.

Holland, Henry Fox, 1st Baron (1705-1774), Eng. statesman, b. Chiswick and educ. at Eton. He entered Parliament in 1738, becoming a partisan of Walpole. In 1743 he became a lord of the Treasury, and 3 years later was promoted to the

office of secretary-at-war, in which position he remained until 1755, when he was appointed secretary of state. He resigned in the following year, but in 1757 became Paymaster-General of the Forces, and in this lucrative office he amassed a vast fortune. He took no active part in politics after 1763, when he was created a peer. He bought Holland House, in Kensington, where he d.



HENRY FOX, FIRST BARON
HOLLAND

Holland, Henry Richard Vassall Fox, 3rd Baron (1773-1840), Eng. statesman, b. Winterslow House, Wilts, and educ. at Eton and Christ Church, Oxford. He succeeded to the title in 1774. His uncle, Charles James Fox, influenced his political views a great deal and also encouraged his interest in literature. After doing the *grand tour*, he returned to England in 1796 and took his seat in the House of Lords. He pub. *Life and Writings of Lope Felix de Vega Carpio*, 1806, and *Three Comedies from the Spanish*, 1807. In 1814 he visited Murat at Naples, and in 1816 strongly opposed the Bill for the detention of Napoleon as a prisoner of war. In 1830 he was chancellor of the duchy of Lancaster, which post, with two short intervals, he held until his death. Holland House was a great social centre of the Whigs during H.'s lifetime. He wrote *Foreign Reminiscences*, and *Memoirs of the Whig Party during my Time*, both ed. by his son, Henry Edward, 4th Lord Holland, 1852.

Holland, Henry Scott (1847-1918), Anglican clergyman, educ. at Eton and Balliol College, Oxford. Took holy orders in 1872; canon of Truro, 1882-4; of St Paul's, 1884-1910; of Christ Church from 1910, and at the same time Regius prof. of divinity at Oxford. Helped to found the Christian Social Union. Editor of the *Commonwealth*. His puba. include: *Logic and Life*, 1882, *Creed and Character*, 1887, *Personal Studies*, 1905, *Vital Values*, 1906, and *Fibres of Faith*, 1910.

Holland, Philemon (1552-1637), called 'the translator-general of his age,' b. Chelmsford, Essex. Having obtained his M.D. degree at Cambridge (1591), he practised medicine at Coventry, and became headmaster of the Free School there (1628). His fame rests on his trans. of Pliny's *Natural History*, 1601, Plutarch's *Morals*, 1603, Xenophon's *Cyropaedia*, 1632, and other classical works. He also pub. an Eng. version of Camden's *Britannia*, 1610.

Holland, Sir Sidney George (1893-), New Zealand statesman and prime minister, b. at Greendale, Canterbury, son of Henry H. (M.P. 1925-35, mayor of Christchurch 1911-18). He served in the First World War, after which, with his brother, he developed an engineering business in Christchurch. He entered Parliament in 1935 and in 1940 became leader of the opposition. He was prime minister and minister of finance from 1949 to 1954, relinquishing the finance portfolio in that year and taking over responsibility for the police. As prime minister he was closely concerned with the decision to send New Zealand troops to Korea, the handling of the 1951 waterfront strike, the 'freezing' of wool proceeds in the boom following the Korean war and payment to farmers over a period of years, the strengthening of New Zealand's defensive alliances with the U.S.A. and other Pacific countries through the Anzus Pact and the S.E. Asia Treaty Organisation, the estab. of floor price schemes for the meat and wool industries, the estab. of the Murupara timber and pulp industry with capital of £29 million, and the decision to accept defence commitments in S.E. Asia in the event of another world war. H. visited Japan before the Commonwealth Conference in 1956 and emphasised the need to develop friendship between that country and the free nations. He resigned his position as prime minister in 1957 owing to ill-health, and in the same year was created K.G.C.B.

Holland, Sir Thomas Erskine (1835-1926), jurist, b. Brighton; son of Rev. Thomas Agar H., rector of Poyning's, Sussex. Educ. at Balliol and Magdalen Colleges, Oxford. In 1874 he was appointed Vinerian reader in Eng. law, and prof. of international law and diplomacy at Oxford. He sat on the Royal Commission of 1903-5 to inquire into the supply of food in time of war, and was sent as plenipotentiary to the Geneva Conference of 1906. His pubs. include: *Elements of Jurisprudence*, 1880, *Institutes of Justinian*, 1873-81, *Studies in International Law*, 1898, *Laws of War on Land*, 1908, *Proposed Changes in the Law of Prize*, 1911, and *Zouche's Jus Feudale*, 1911. Knighted 1917.

Holland: 1. Popular name for the Netherlands (q.v.). Since 1840 H. has formed 2 provs., N. H. and S. H. (qq.v.). See also HOLY ROMAN EMPIRE.

2. City in Michigan, U.S.A., on the Black R., 25 m. SW. of Grand Rapids, in tulip-growing, orchard, sugar-beet, dairy area. It manufs. furnaces, aerol-

plane motors, and air-cond. ment. Settled from the Net. 1847, it holds an ann. tulip festival. It is the seat of Hope College and the W. Theological Seminary. Pop. 15,800.

Holland, coarse variety of linen, unbleached, and often dyed brown. Its texture is strong and it washes very well. H. was formerly fine linen manufactured in the Netherlands; hence its name.

Holland, New, see BARROW-ON-HUMBER.

Holland, North, see NORTH HOLLAND.

Holland, Parts of, administrative div. of Lincs, which includes most of the fens in the SE. Area 267,848 ac.; pop. 101,555.

Holland, South, see SOUTH HOLLAND.

Holland/America Line, shipping line, estab. at Rotterdam in 1873, which maintains a regular passenger and freight service between Rotterdam, Le Havre, Southampton, and New York; also between the W. coast of the U.S.A. and Canada. The flagship of the fleet is S.S. *Rotterdam*, 37,000 tons.

Holland Park, in the bor. of Kensington, London, the park of the famous Holland House, a fine Jacobean mansion that became the great Whig centre in the early 19th cent. Owing to severe damage in the Second World War it has been demolished. The name H. P. is given to the dist. lying N. and W. of the park.

Hollands, also called Schnapps, *Schiedam* (from the dist. in which it is made), and *Genever* through confusion with Fr. *genièvre*, juniper, is a form of gin very different from King. gin. Originally the Dutch used to ferment the juice of crushed juniper berries and then distil it. To-day a mash of barley malt mixed with ground juniper is used, and as it is distilled at a much lower strength than Eng. gin, it preserves the strong flavour of its components with a taste which has to be acquired. See GIN.

Hollar, Wenceslaus, or *Wenzel* (1607-1677), Bohemian etcher, b. Prague, and d. in London. He studied at Frankfurt, Strasburg, and Cologne, and in the last-named city attracted the notice of the earl of Arundel, who brought him to England (1637). During the Civil War he took refuge for 8 years in Antwerp but afterwards returned to London. He worked with unceasing industry for his publishers, who took advantage of his poverty and his ignorance of the country to underpay him. He illustrated Ogilby's *Homer* and *Virgil*, executed some beautiful 'Views of London,' and other cities, and a great variety of other subjects including the admirable costume studies of his *Theatrum Mûrærum*. See study by Parthey, 1853-8, with catalogue of his plates.

Holles, Denzil, 1st Baron Holles of Ifield (1599-1680), Eng. statesman, a son of John H., 1st earl of Clare. He first entered Parliament in 1624, opposed the foreign policy of Buckingham, and was one of the 5 members who held the Speaker in his chair (1629) while Eliot's protestations were passed. After the outbreak of the Civil War H. fought at Edgehill and Brentford, but his firm parl. and Presbyterian principles soon made him out of

sympathy with Cromwell. He fled to France in 1649, returning in 1659 at the invitation of Monck. He went to the Hague to invite Charles II to return to England, 1660, and was made a peer the following year, but gradually moved into opposition to Charles, owing to his own convinced political and religious sympathies.

Holles, Thomas Pelham-, see NEW-CASTLE, 1st DUKE OF.

Holleschau, see HOLESŌV.

Hollingshead, Raphael, see HOLINSHED.

Hollis, Maurice Christopher (1902-), historian, b. Axbridge, Somerset, son of the bishop of Taunton. Educ. at Eton and Balliol College, Oxford, he was a master at Stonyhurst from 1926 to 1935, and from then till 1938 did research work at Notre Dame Univ., Indiana. In the Second World War he was a squadron-leader in the R.A.F. Later he took up journalism and was on the staff of the *Tablet*. In 1945 he was elected Conservative M.P. for Devizes. His books include *Glastonbury and England*, 1927, *The Monstrous Regiment*, 1929, *Foreigners Aren't Fools*, 1936, *The Rise and Fall of the Ex-Socialist Government*, 1947, *Can Parliament Survive?* 1949, and studies of Dr Johnson, 1928, St Ignatius, 1931, Erasmus, 1933, Dryden, 1933, Sir Thomas More, 1934, Lenin, 1938, G. K. Chesterton, 1950, and Evelyn Waugh, 1954.

Holloway, residential dist. in the bor. of Islington (q.v.), N. London. At the N. end of Camden Road is the City Prison for women, a castellated building erected in 1849-51. Pop. (Upper H.) 30,000; (Lower H.), 40,000.

Holloway College, Royal, women's college of London Univ. (q.v.), situated at Englefield Green, Surrey, and founded in 1883 by Thomas Holloway. The building, in the style of the Fr. Renaissance, was opened by Queen Victoria in 1886, and contains a fine collection of paintings by Constable, Landseer, Millais, Frith, and other famous artists. There are some 360 students, mostly resident.

Holly, or *Ilex aquifolium*, species of Aquifoliaceae, found very commonly in Britain. It is cultivated both as an ornamental evergreen tree and as a hedge-plant on account of its dense and prickly foliage. The timber is fine-grained, heavy and compact, and is valued by both the turner and the mathematical instrument maker; the flowers are small and white; the berries are scarlet and glossy, giving the plant a brilliant appearance in late autumn. They are very poisonous, producing purgative and violent emetic effects.

Hollyhoek, popular name for the species of Malvaceae, known botanically as *Aithaea rosea*, a near ally of the marsh-mallow. It is a hardy perennial, herbaceous in habit, and is frequently cultivated in Britain especially in the gardens of country cottages.

Hollywood, dist. (pop. 185,000) in the city of Los Angeles, California, U.S.A., situated amidst beautiful surroundings

and with an ideal climate. It is famous as the H.Q. of the Amer. film industry, its chief buildings being the film studios, though many major studios have moved to nearby dists. It is also a television and radio centre. It has extensive shopping and business dists. Of interest are Hollywood Bowl (seating 20,000), Griffith Park, including Griffith Observatory and Planetarium, the Greek Theatre (seats 4000), and Barnsdall Park. Near by are Culver City, also a suburb of Los Angeles and a centre of the Amer. film industry, and Los Angeles International Airport.

Holm Oak, *Quercus ilex*, shrub-like tree, member of the family Fagaceae (beeches and oaks), with holly-like leaves. Found in Mediterranean countries, yields a useful timber, and its bark is used for tanning. In Britain it occurs as an ornamental evergreen bush 20 to 30 ft high.

Holm Thrush, see MISSEL THRUSH.

Holman, James (1786-1857), 'The Blind Traveller', native of Exeter. Being compelled through total loss of sight to quit the navy, he travelled alone through the greater portion of Europe (1819-24) and round the world (1827-32). He pub. interesting journals of his travels.

Holman, William Arthur (1871-1934), Australian lawyer and statesman, b. London, arrived at Melbourne, 1888. H. was elected member of the legislative assembly for Grenfell, New South Wales, 1898; in 1910 he became attorney-general in the first Labour gov. in New South Wales, and in 1913 premier. During the war he supported conscription and subsequently failed to obtain Labour endorsement, but was elected as a Nationalist candidate in 1917. He was defeated in 1920 and resumed practice at the Bar. See H. V. Evatt, *Australian Labour Leader*, 1940.

Holme, Constance (), novelist, b. Milnthorpe, Westmorland. In 1916 she married F. B. Punchard, and 3 years later her novel *The Splendid Faring* won the Femina Vie Heureuse prize. Most of her books are true regional literature, being written round her native co. They include *The Lonely Plough*, 1914, *The Old Road from Spain*, 1916, *Beautiful End*, 1918, *The Trumpet in the Dust*, 1921, *The Things Which Belong*, 1925, and *He-Who-Came*, 1930.

Holmes, Sir Charles John (1868-1936), landscape painter, b. Preston; eldest son of Rev. Charles Rivington H., of Stratton, Cornwall. Educ. at St Edmund's, Canterbury, Eton, and Brasenose College, Oxford. Distinguished for paintings of the industrial scene and valuable books of criticism. His works are in the Ashmolean, Fitzwilliam, Brit., Victoria and Albert Museums and Tate Gallery. Knighted, 1926; K.C.V.O., 1928. Ed. *Burlington Magazine*, 1903-9; Slado prof. of Fine Art, Oxford, 1904-10; director National Gallery, 1916-28. Pub. *Constable*, 1902, *Notes on the Science of Picture-Making*, 1909, *The National Gallery*, 1923-7.

Holmes, Nathaniel (1815-1901), Amer. jurist and author, b. Peterboro, N.H.;

graduated at Harvard, and was judge of Missouri Supreme Court, 1865-8. From 1868 to 1873 he was prof. of law at Harvard. He wrote extensively on the Shakespearean question. In *The Authorship of Shakespeare*, 1875, he credits Bacon with the dramas.

Holmes, Oliver Wendell: 1. (1809-94) Amer. doctor, poet, and essayist. b. Cambridge, Massachusetts. Educ. at Phillips Andover Academy and Harvard, he studied medicine there and in Paris. He practised as a doctor till 1849, and from 1847 to 1882 was prof. of anatomy and physiology at Harvard, and dean of the Medical School, 1847-53. His medical writings include his famous essay on *The*



OLIVER WENDELL HOLMES (1809-94)

Contagiousness of Puerperal Fever, 1843, in which he pointed out that the disease was frequently conveyed from patient to patient by the physician; this work, his most important contribution to medical science, preceded that of Semmelweis (q.v.) by 5 years. H. also wrote prize-winning essays on other medical subjects. One of the Boston literary circle, he pub. 8 vols. of poems, among which the best-remembered are 'Old Ironsides,' 'The Chambered Nautilus,' and 'The Wonderful One-Hoss Shay.' His *Lectures on English Poets of the Nineteenth Century* was pub. in 1853. He is famous above all for his 'Breakfast Table' series of table talks, *The Autocrat of the Breakfast Table*, 1857, meeting with such success that he followed it with *The Professor at the Breakfast Table*, 1860, *The Poet at the Breakfast Table*, 1872, and *Over the Tea-Cups*, 1891. His novels *Elsie Venner*, 1861, and *The Guardian Angel*, 1867, illustrate in an intimate and charming manner the New England life of his day, and in 1885 he pub. a life of Emerson. See J. T. Morse, *Life and Letters of Oliver Wendell Holmes*,

1896; also studies by W. H. Schroeder, 1909; S. M. Crothers, 1910; M. A. de W. Howe, 1939; and Catherine D. Bowen, *Yankee from Olympus*, 1948.

2. (1841-1935) Son of the famous author of the same name, b. Boston, Massachusetts, U.S.A. Graduated from Harvard Univ., and as a youth was serving during the Civil war with the 20th Massachusetts Volunteers, rising to the rank of lieutenant-col. He was retired with the rank of captain, was admitted to the Bar in Massachusetts in 1867, and started the practice of his profession in Boston. In 1870-1 he became instructor in constitutional law at Harvard, and was prof. of law there in 1882. He was associate justice 1882-99 and chief justice 1899-1902 of the Supreme Court of his state. In 1902 he was made an associate justice of the U.S. Supreme Court. As such he became famous for his dissenting judgments, which were almost invariably supported by his colleague, Justice Brandeis. In 1931 many of these famous dissenting opinions, constituting a sort of Amer. Magna Carta of real democracy, were ed. in book form by Prof. Felix Frankfurter of the legal faculty of Harvard Univ. His masterpieces in legal literature were the 12th ed. of Kent's *Commentaries*, 1873, and *The Common Law* (his Lowell Lectures), 1881. See F. Frankfurter, *Mr. Justice Holmes and the Constitution*, 1927; also Catherine D. Bowen, *Yankee From Olympus*, 1948.

Holmfirth, tn, 6 m. S. of Huddersfield. W. Liding, Yorks, England. There are cloth and wool mills and stone quarries. The Bilberry reservoir here burst in 1852; 81 people were drowned and much damage to property was done. Pop. 19,073.

Holmium, chemical element of atomic number 67 and atomic weight 163.5; its symbol is Ho. It is a member of the group of rare-earth metals and occurs in gadolinite, euxenite, polycrase, and other minerals. H. was discovered in 1878-9 by P. T. Cleve and J. L. Soret, independently of each other.

Holoccephali, see CHIMAERA.

Holofernes, called in Judith ii. 4, 'the chief captain of the army of Nebuchadnezzar.' The deuterocanonical or apocryphal book of Judith tells how the Jewish maiden saved her nation by assassinating H. before the walls of Bethulia, i.e. Jerusalem. Modern critics generally regard the book of Judith as fiction, though it may have a historical nucleus. In that case Nebuchadnezzar is a misnomer, perhaps for Artaxerxes III Ochus (359-336) who according to Diodorus Siculus (*Hist.* 10, 47, 4) had one general named H. and another called Bagoas (Judith xii. 11). Persian kings were sometimes called kings of Assyria (cf. Ezra vi. 22).

Holograph. In Scots law, a H. deed or will is one written wholly in the grantor's own hand. Such an instrument is admissible in evidence without proof of attestation, because it is unquestionably the strongest proof and a document least

capable of imitation. But the presumption of authenticity may, of course, be rebutted by proof to the contrary. H. deeds bind the grantor as effectually as if executed with the statutory solemnities essential to other deeds; but such effect endures only for 20 years. Deeds in which all the material parts are in the grantor's handwriting, or in which what is not in his handwriting is by the deed formally adopted by the grantor, have the same effect as H. deeds. H. wills, even if unattested, are presumed to have been executed at the date upon which they are expressed to have been made, but it is otherwise with H. deeds.

Holothurian (Gk. *holos*, whole, and *thuroide*, like a door), name given to any individual of Holothuroidea, a class of Echinodermata commonly called the sea-cucumbers. A H. is an elongated, worm-like animal with a ring of large retractile tentacles surrounding the mouth; these tentacles are modified tube-feet, and contain an extension of the water-vascular system. The ambulacral feet are furnished with a suckorial disc, and the ambulatory papillae are pointed at the ends, with elementary or no calcareous plates. The water-vascular system consists of a circular vessel with 2 appendages, the polian vesicle and the stone canal, and 5 radial vessels. H. include the family Holothuriidae, with the Brit. genus *Holothuria*; Synallactidae, whose species have a flattened body; Elapsidae, with a more or less ventral mouth and elongated body; Pelagothuriidae, pelagic forms with a cylindrical body; Molpadidae, burrowers in mud or clay; Cucumariidae, with the familiar Brit. genera, *Cucumaria*, *Thyone*, *Psolus*, and *Phylloporus*. The order Paractinopoda contains the single family Synaptidae, whose typical genus *Synapta* is known on Brit. coasts, *S. inhaerens* and *S. digitata* being the commonest species.

Holroyd, Sir Charles (1861-1917), painter-etcher, b. Leeds; eldest son of Wm H., merchant. Educ. at Leeds Grammar School, he studied at the Slade School under Legros. Fellow, Society of Painter-Etchers, 1885. In Italy with travelling scholarship, 1889-91. Sent 7 pictures to Royal Academy, 1885-95, but his etchings are much better than his pictures. He also executed some portrait-etchings and excellent drawings of trees. First keeper, National Gallery of Brit. Art, 1887-1908. Director, National Gallery, 1906-18. Knighted 1903.

Holroyd, John Baker, see SHEFFIELD, 1st EARL OF.

Holst, Gustav (1874-1934), composer, b. Cheltenham, of Swedish extraction on his father's side. He became an organist and choirmaster in Gloucestershire, where he laid the foundations of his skill in choral effect, but did not intend to continue in this career. In 1895 he obtained a scholarship at the Royal College of Music, learning under Stanford and Sharpe. Three years later he decided to earn his living as a trombonist, and so acquire experience of the orchestra from

the inside. In 1903 he was music master at James Allen's Girls' School, at Morley College in 1907, and later worked in a similar capacity at St Paul's Girls' School and Reading College. He had to wait long for recognition. His chief works are *The Planets*, 1915-16, orchestral suite; *The Hymn of Jesus*, 1917; *Ode to Death*, 1919, produced at the Leeds Festival in 1922; *The Perfect Fool*, an opera, produced at Covent Garden by the Brit. National Opera Company in 1923; *Choral Symphony* and other choral works; *Savitri*, a 1-act opera; and *At the Boar's Head*, 1925, a Shakespearean opera, in which he aimed at making Falstaff move to genuine folk tunes. Side by side with the influence of Eng. folk music was that of Indian literature; *Savitri* is a story from the *Mahabharata*, and a number of choral hymns and songs a setting from the *Rig Veda*. See *Gustav Holst*, 1938, and *The Music of Gustav Holst*, 1951, by his daughter, Imogen Holst.

Holstein, see SCHLESWIG-HOLSTEIN.

Holston, riv. of the U.S.A. Rising with 2 branches in SW. Virginia, it flows with a SW. course into the NE. of Tennessee, where the forks unite at Kingston. At a spot some 4 m. E. of Knoxville is the confluence of this riv. with the French Broad, after which their united streams are called the Tennessee. Length 350 m.

Holsworthy, urb. dist. and mkt tn of Devon, England, 46 m. from Exeter. An ann. fair is held there in the summer. Formerly a canal connected H. with Bude, but it is now disused. Pop. 1550.

Holt, Henry (1840-1926), Amer. book publisher, who founded in 1866 the firm which still operates successfully under his name. For many years the firm pub. the Amer. eds. of the Home Univ. Library. In 1926 Edward N. Bristol (1860-1945) succeeded H. H. in the presidency. Control of the company changed hands in the 1940's and Edgar T. Rigg (1900-) assumed the presidency in 1949.

Holt, Sir John (1842-1910), a lord chief justice of England, educ. at Oriel College, Oxford. Called to the Bar in 1863, he appeared as counsel for the defence in a series of state trials, and William III rewarded his ability and zeal by making him lord chief justice (1889). H. was noted in court for his courtesy towards prisoners, his aloofness from all party prejudice, and his exceptional moral courage.

Holt: 1. Mkt tn, 9 m. W. by S. of Cromer, in Norfolk, England. Here is Gresham's School founded in 1555, with endowments managed by the Fishmongers Company. Pop. 2000.

2. Vill. on the Dee, 5 m. ENE. of Wrexham in Denbighshire, Wales. Pop. 1200.

Holtby, Winifred (1898-1935), novelist, b. Rudstone, Yorks. Educ. at Queen Margaret's School, Scarborough, and Somerville College, Oxford, she served with the W.A.A.C. in the First World War. In 1921 she moved to London, where she worked for *Time and Tide*. She also travelled in Europe, lecturing

for the League of Nations Union. She d. prematurely of overwork, just after finishing her novel *South Riding*, which was awarded the Tait Black Memorial Prize and is generally reckoned her best. Others are *Anderby Wold*, 1923, *The Crowded Street*, 1924, *The Land of Green Ginger*, 1927, *Poor Caroline*, 1931, and *Mandoo! Mandoo!* 1933. She also wrote *Eutychus, or, The Future of the Pulpit*, 1928, 2 books of short stories, *Truth Is Not Sober*, 1934, and *Pavements of Anderby*, 1937, and a study of Virginia Woolf, 1932.

Holtei, Karl Eduard von (1798-1880), Ger. actor and author. Having volunteered in the Prussian Army and studied law in Breslau, he became an actor, and appeared as Mortimer in Schiller's *Maria Stuart*. His popular vaudeville *Die Wiener in Berlin* was produced in 1824, and his successful play *Lenore* in 1829. Meanwhile, he toured abroad, and won golden opinions by dramatic recitals from Shakespeare and his own poems. These latter reveal his natural lyrical gift; his *Schleische Gedichte*, 1830, had reached their 20th ed. in 1893. H. left behind him 3 novels and 8 vols. of autobiography, 1843-50.

Hölty, Ludwig Heinrich Christoph (1748-76), Ger. poet, b. Mariensee. He studied at Göttingen, and belonged to the *Göttinger Hainbund*. He was of delicate health, and his poetry expresses a certain melancholy and sadness. He wrote mainly songs, odes, and elegies, which show much fine feeling for nature, and the peace of country life. He d. of tuberculosis at the age of 28. His *Sämtliche Gedichte* were ed. in 2 vols. in 1782; a critical ed. by W. Michael appeared in 1914-18. See H. Ruete, *Hölty*, 1883; E. Albert, *Das Naturgefühl Hölty's*, 1910.

Holtzendorff, Henning von (1853-1919), Ger. admiral, b. Berlin, son of Otto von H., vice-president of the Court of Appeal. His early naval life was spent chiefly in Far E.; he attained flag-rank in 1905; vice-admiral, 1907; admiral, 1910—in command of High Sea Fleet. Retired from sea-duties, 1913; in Sept. 1915, chief of naval staff. Gave orders for 'unlimited' U-boat warfare, 22 Dec. 1916. Relieved of office on account of ill-health, July 1918.

Holtzendorff, Joachim Wilhelm Franz Philipp von (1829-89), Ger. criminologist, attended the univs. of Bonn and Heidelberg, and finally graduated in law at Berlin, 1852. *Privatdozent* in 1857, he was 3 years later appointed prof. extraordinary, but his advanced and enlightened political opinions long hindered his preferment. In 1873, however, he became head of the faculty of jurisprudence at Munich Univ. and held this chair until his death. An authority on criminal law, he is esteemed also as the editor of *Handbuch des deutschen Strafrechts*, 1871-7, and *Handbuch des Völkerrechts auf Grundlage europäischer Staatspraxis*, 1885-90, and as the author of a series of independent treatises, such as *Die Principien der Politik*, 1869.

Holtzmann, Heinrich Julius (1832-1910), Ger. theologian, son of the eminent philologist, Adolf H.; prof. of theology at Heidelberg, 1861-74, afterwards at Strassburg. His reputation as a critic and scholar rests on his exegesis of the N.T. and especially the Johannine books, 1890, the synoptic gospels, 1889, and the Acts of the Apostles, 1901. He upheld the theory that Matthew and Luke derive from Mark. At first somewhat conservative, he later became a leader of the advanced school. Another of his critical pubs. was the *Lehrbuch der neutestamentlichen Theologie*, 1897.

Holub, Emil (1847-1902), African traveller, b. at Holitz, Bohemia. He took his M.D. degree at Prague Univ., and went out to South Africa in 1872. He travelled over various parts of the country, collecting valuable natural hist. specimens. His books are: *Die Kolonisation Afrikas*, 1881-2, *Sieben Jahre in Südafrika*, 1872-79, 1881 (Eng. trans. 1881), and *Von der Kapstadt ins Land der Maschukulumbé*, 1888-90.

Holy Alliance, league ratified at Paris in 1815 after the downfall of Napoleon. Alexander I of Russia and the sovereigns of Austria and Prussia made a solemn covenant that in all matters both of domestic and foreign policy they would be guided by the principles of Christian ethics. The main use of the alliance, one of whose alleged aims was the preservation of peace, was in helping to suppress the popular movements for freedom and equality, which were at that time a growing menace to royal prerogative and despotism throughout Europe. Britain declined to join the H. A.; the sultan, as a non-Christian, was not invited to do so. The initiator, Alexander I., can have had no idea at the time the H. A. was formed that an instrument conceived of by him as spiritual in character would be used with such material effect by Metternich (q.v.).

Holy Coat of Trèves, famous relic of the 11th-cent. cathedral of SS. Peter and Helena in Trèves (Trier), Germany. Legend says that it was brought by the Empress Helena from Palestine, but the first reference to it is on a 6th-cent. tablet. It is reputed to be the 'seamless coat' of Christ, but is now little more than 'connected fragmentary particles' of cloth. In 1512 the pope sanctioned its exhibition once in 7 years. Miracles are believed to have occurred in connection with this relic. In 1891, when it was on view for the first time since 1844, there were almost 2 million pilgrims.

Holy Cross, Mount of the peak, 14,000 ft in height, in the Sawatch Range of the Rocky Mts, 15 m. NW. of Leadville, Colorado, U.S.A. Its name is taken from 2 huge snow-filled ravines which have the appearance of a cross.

Holy Ghost, see HOLY SPIRIT.

Holy Grail, The, see GRAIL, HOLY.

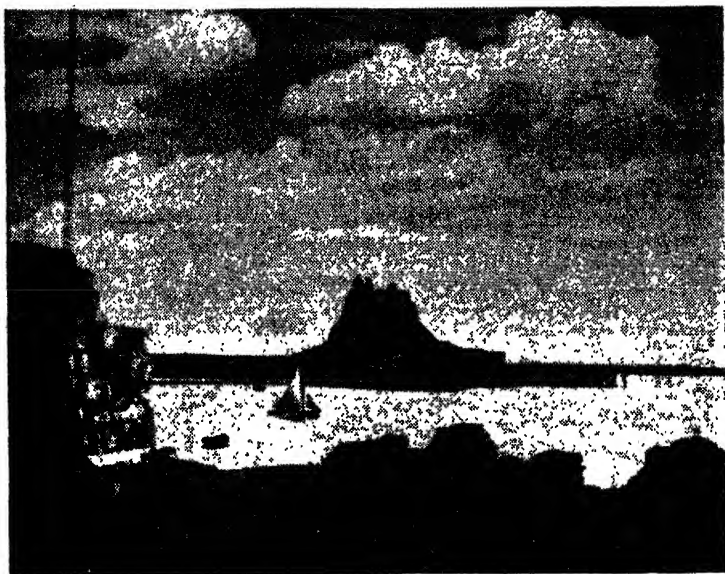
Holy Island: 1. (anc. *Lindisfarne*) The 'Cradle of Christianity,' is. off the coast of Northumberland, England, connected with the mainland at low tide. It is 3 m. long and 1½ m. broad. The N. part is

mostly sandy, but the rest is fertile. It is chiefly noted for its ruins of sacred edifices. St Aidan founded here a priory in 835 with which later St Cuthbert was connected. This was destroyed in 893 and in 1093 its remaining materials were used to build a Benedictine priory. There is also a 16th-cent. castle, the property of the National Trust. The is. was sev. times ravaged by the Danes, and this, added to the increasing importance of the

Richard Whytford, Bridgettine monk of Syon Abbey.

Holy of Holies, inner chamber of the Jewish tabernacle (Exod. xxvi.), and of Solomon's Temple (1 Kings vi.). It was 'the most holy place,' contained the Ark of the Covenant and the 'mercy seat,' and was separated by a veil from the outer chamber, 'the holy place.'

Holy Orders, *see* ORDERS, HOLY; ORDINATION.



Mustograph Agency

LINDISFARNE CASTLE, HOLY ISLAND, NORTHUMBERLAND

see of Durham, caused it to be ultimately abandoned. To the SW. is a small fishing vil. with harbour. Area 1326 ac.; pop. 238. *See* LINDISFARNE GOSPELS.

2. Rocky is. off the E. coast of Arran Is., Scotland, rising steeply from the Firth of Clyde, with a lighthouse.

3. Or Holyhead Is., rocky and barren is., 8 m. long by 3½ m. broad, W. of Anglesey, North Wales, separated from it by a sandy causeway. Trearddur on Penrhos Bay is a seaside resort.

Holy Land, *see* PALESTINE.

Holy Name, a devotion to the holy name of Jesus dating from Apostolic times, which took shape in the 15th cent. It was regularised by Innocent XIII in 1721, and the feast is now kept on the Sunday after the Circumcision. An Eng. expression of it is to be found in the *Jesus Psalter* written in the 16th cent. by

Holy Places, localities in and close to Jerusalem associated with the life of Christ. They include the church of the Holy Sepulchre (*see* SEPULCHRE, CHURCH OF THE HOLY); Bethlehem, whose outstanding monument is the Basilica of the Nativity, shared by sev. communities, Orthodox, Lat. Armenian, Jacobite, Abyssinian, and Coptic; the Garden of Gethsemane, belonging, in shares, to the Franciscans, the Orthodox Patriarchate of Jerusalem, the Russians, and the Armenians; and other sacred sites on Olivet or the Mt of Olives such as the 5th-cent. octagonal church of the Ascension. The pope entrusted the custody of the H. P. in 1230 to the Franciscans and later this custody passed to France, the position, however, being complicated by the fact that the Turkish suzerain was in possession of the Holy Land. Difficulties

over the custody as between France and Russia, representing respectively W. and E. Christianity, was one contributory factor to the outbreak of the Crimean war. Under the Palestine mandate the Brit. Gov. undertook the custody of the H. P. Although the U. N. resolution of 1947 constituted Jerusalem as a *corpus separatum*, it was not implemented and most of the H. P. are now in the kingdom of Jordan.

Holy Roman Empire. This name is applied to the empire founded by Charlemagne in the year 800, and which was regarded as the revival of the W. Rom. empire. It did not include all the ter. of the latter organisation, but nevertheless it typified the ideal. The W. Rom. empire had come to an end in 476, when Odoacer had conquered Italy. Since those days the face of Europe had changed considerably. Odoacer had been deposed, executed, and succeeded by Theodoric, the leader of the Ostrogoths; and the death of the latter (526) had witnessed the break up of the power of the Ostrogoths, and for a time Italy became the scene of constant wars. Justinian and his general, Belisarius, had reconquered much of Italy, but had finally been held in check, and then the N. part of the peninsula passed into the hands of the Lombards. In another part of W. Europe the power of the Franks had been constantly on the increase. The line of Clovis had passed away with the last of the *rois fainéants*, the Mayors of the Palace had usurped the kingly powers, and finally, in 732, the greatest of the Mayors of the Palace, Charles Martel, had defeated the Muslims at Poitiers and so probably saved W. Europe for Christianity. Charles Martel also helped the papacy in the struggle against the Lombards, and commenced the long alliance of the Carolingians and the papacy. In the meantime, with Italy in a constant state of flux, the growth of the power of the bishops of Rome had been equally great, and by the 8th cent. the papacy's claim to spiritual supremacy was generally acknowledged in the W.

The accession of Charlemagne in 768 marks the beginning of the closer unity of papacy and empire. Twice he crossed the Alps to rescue the papacy from the clutches of the Lombards. Finally, during his second expedition, he wrested for himself the iron crown of Lombardy. Henceforth the papacy was to be protected by its most helpful ally. The gratitude of the pope was speedily seen: in Rome on Christmas Day in the year 800 Charlemagne was saluted and crowned by the pope as emperor.

The long quarrel between the future temporal and spiritual heads of Christendom was to be one of the dominant features of the Middle Ages. For Charlemagne can hardly have foreseen the claims which the later successors to the chair of St Peter were to found on his coronation. The temporal pretensions of the later papacy were based on the fact that the pope had raised a mere king to the empire.

The Carolingian empire was based upon the model not of Augustus but of Constantine, from whose donation the papacy claimed for itself all the provs. of the W. empire. The empire did not, save as an ideal, outlive its founder. The reign of his son witnessed the beginnings of the end, and the treaty of Verdun (843) estab. a potential France, Germany, and a middle kingdom, including much of what is now Italy, which was gradually absorbed into the other 200 states. Only once again, under Charles the Fat (882-7), were the 3 portions of the empire of Charlemagne united. The later Carolingians were as weak as the *rois fainéants*, and the effective power soon became concentrated in the hands of the local Ger. princes. In 911 Conrad I was chosen as Ger. king, as the direct Carolingian line was now extinct in Germany: the Carolingians continued in France until 987, when they were superseded by the Capetian line. The beginning of the 10th cent., then, marks the final separation of France from the empire. Conrad's son, Henry the Fowler, concentrated his attention upon extending towards the E., and consolidating his power in Germany itself; but he was never crowned as emperor. It was Henry's son, Otto the Great, who really revived Charlemagne's conception of a H. R. E. In Germany he put down 2 civil wars in the duchies, first giving them into the hands of his relatives, then seeking active alliance with the church to produce unity. His greatest success was the victory over the Huns on the Lechfeld (955) and his policy of 'Marks' (Marches) along the E. borders. The alliance with the papacy led to the request to interfere in It. politics, which he did in 951 and 962. The second intervention led to his coronation as emperor of the W. (963). The imperial crown was not hereditary; but in practice a powerful succession of Ger. monarchs could keep it in their family for generations at a time, and in its last centuries it became an exclusively Hapsburg possession.

Otto I regarded himself as the successor of Charlemagne, and appointed and deposed popes from 963 till his death. Otto II (973-83) began to split the great duchies, but still extended towards the E. The ideals of Otto III (983-1002) were more universal, and he wished to make Rome and not Aachen his centre. On the death of Henry II (1002-24), the last of the Saxon house, the empire passed to the Salian house, the first emperor of which was Conrad II (1024-37), who concentrated upon ensuring the hereditary succession of his house. The reign of his son, Henry III (1037-56), is usually regarded as the most glorious period of the medieval empire. Hungary, Poland, and Bohemia became fiefs of the empire. There was comparative peace, and the development of almost a national feeling in Germany.

During this period the papacy had been gradually developing its resources. In 918 there had been estab. the monastery of Cluny, whose members were now aiming

at the purification of the Church and its release from lay interference, and the exaltation of the papacy. Henry III showed deep interest in eccles. reform, but in his actual relations with the papacy appointed and deposed popes. Henry I (1056-1106), in his struggle with the papacy, was faced with the 'noblest figure' in hist., Gregory VII (Hildebrand). In 1075 Hildebrand formulated the claims of the papacy by stating that no lay prince must interfere with the election and investiture of clerics. Henry defied the pope, and the pope excommunicated the emperor, who at once found himself in great difficulties, because his discontented vassals refused to recognise an excommunicated king. He was forced to cross the Alps, and in 1077 to undergo the dramatic humiliation at Canossa. But Hildebrand himself subsequently alienated the Ger. princes, and in 1085 he was driven from Rome, and found a refuge in Apulia with the Normans. In the same year he d. Henry IV was deposed by his son (1106), and also d. in the same year. Henry V (1106-25) concluded his phase of the struggle by the Concordat of Worms (1122). By this concordat the spiritualities were to be conferred by the papacy, whilst for the temporalities of the bishopric homage was to be done to the reigning prince.

The first Hohenstaufen emperor, Frederick I (1152-90), was drawn into a long struggle with the papacy, whose ally now was a new organisation, the Lombard League, formed by the tns of N. Italy. He was defeated at Legnano (1176), and again an emperor made submission to a pope in 1177. But Frederick had succeeded in establishing a conditional supremacy over the important tns of N. Italy. By the marriage of his son to Constance, heiress of the Norman dominions, it seemed that the dream of an empire from Sicily to the Baltic would be realised.

Henry VI (1190-7) had greater promise than any previous emperor. The brevity of his reign, however, prevented any great developments, and his death left the throne to a child. The power of the papacy is well illustrated by the events of the next few years. Innocent III took Constance and her son under the protection of the papacy, giving them the 2 Sicilies. The empire was granted to Otto IV on condition of alliance with the papacy. Otto proved recalcitrant, and in 1214 the papacy offered the empire to the young Frederick. John of England allied himself with Otto, his nephew. Frederick found support in Philip Augustus, and defeated the allied forces of John and Otto at Bouvines, a battle which influenced England, in that it led indirectly to the granting of Magna Charta; France, in that it removed fear of Eng. interference and helped the Capetian monarchy. In the last phase of the great medieval struggle, the cause of papal unity seems to have lain chiefly in fear of the position of the emperor, Frederick II, who now held both Sicily and N. Italy. But with the death of Frederick the

papacy gathered itself together for a final attack on the Hohenstaufen. His direct successor was 'the little Conradin,' but he did not gain election in Germany. Various candidates appeared, among whom were Alfonso of Castile, Richard of Cornwall, and Wm of Holland. But none were actually recognised as emperor. Therefore the period from 1250-73 is known as the Great Interregnum, so that the death of Frederick II marks the end of the great period of the medieval empire. In 1273 Rudolf of Hapsburg was elected emperor, but he never ruled over Italy. Henceforth the H. R. E. does not include Italy proper, and may to a very extent be regarded as the personal and private possession of the house of Hapsburg.

Most of the later emperors were chosen from the house of Hapsburg, whose chief possessions were in Austria, acquiring Bohemia by marriage. In 1384 the granting of the Golden Bull by Charles IV, which settled the method of choosing the emperor, restricting the number of electors to 7, and naming them, lessened the power of the emperor in favour of the princes. During the 14th and 16th cents. the elected emperor often paid more attention to his hereditary domains than to his imperial claims, because the empire was becoming so weak and poor. Therefore the emperor was chosen from the most powerful House, Austria, so that his private possessions would lend dignity to his position. During the 16th cent. Maximilian added Burgundy to the possessions of Austria; his son, Charles V, held Spain, the Netherlands, Burgundy, Milan, the 2 Sicilies, Austria, Hungary, the Sp. dominions in South America, and the empire, and aimed to restore the empire to its old medieval glory. But the empire itself was basically German, and had little to do with affairs outside. The Reformation and Counter Reformation, affected it greatly. There was no clear line of demarcation of faiths, and by the settlement of the peace of Augsburg, 1555, the 2 religions were placed on an equality, each state setting up its own religion (*cuius regis, eius religio*). Out of this unstable situation there developed the Thirty Years War, fought with the empire as a battleground. In 1648 the peace of Westphalia was concluded, but the empire had been ruined by the war. From this time Germany was a mere lax confederation of petty despotisms and oligarchies; Switzerland received its independence, as did also the Netherlands. Sweden and France received land within the traditional imperial ter. There could be no national feeling in such circumstances; the power of the emperor had departed, and interest must centre in the rising power of Prussia and its rivalry with Austria, shown especially in the war from 1740 to 1763, in which Frederick the Great opposed Maria Theresa.

The ambitions of Napoleon eventually led to the empire's downfall. First the Austrian Netherlands and all Germany W. of the Rhine were added to France.

When Bonaparte in 1804 crowned himself emperor of the Fr., Francis II changed his title to Hereditary Emperor of Austria. In 1805, at the treaty of Pressburg, he again changed it to emperor of Germany and Austria. Many of the Ger. princes now seceded from the empire, and formed themselves into a Confederation of the Rhine under the protection of Napoleon. In the same year, 1806, Francis formally resigned the empire, which thereupon ceased to exist, even in theory. It had long since ceased to have any real meaning in practice. Since then there has been no other emperor of the H. R. E. See also separate articles on rulers mentioned in this article. See J. Bryce, *The Holy Roman Empire*, 1864; T. F. Tout, *The Empire and the Papacy*, 1898; H. A. L. Fisher, *The Medieval Empire*, 1898; J. W. Thompson, *Feudal Germany*, 919-1190, 1928; A. J. P. Taylor, *The Course of German History*, 1945; R. Flenley, *Modern German History*, 1953.

Holy Sepulchre, Church of the, see SEPULCHRE.

Holy Shroud of Turin, an ant sheet of linen (14+ ft by 3+ ft) owned for hundreds of years by the house of Savoy and now by the ex-king of Italy, kept in Turin Cathedral where it is very rarely exposed. It is believed to be the actual linen cloth (sindon) in which the body of Jesus Christ was wrapped after the crucifixion. Faint stains and spots on it reveal the outlines of a human body, front and back, the sheet having been turned over the head. The shroud was long regarded as a forgery, though the staining seems natural and shows no sign of the use of pigment. In 1898, however, an amateur photographer, Chevalier Pia, with the king's permission, photographed the shroud, and was astonished to find that the negative showed a human figure in positive, perfectly proportioned anatomically, and appearing to stand out in the round. In other words the linen itself is an almost perfect negative (imperfect since the blood has made a dark or positive stain) and of a person who has suffered in every detail as Christ is recorded to have done. This is extraordinarily strong evidence for the authenticity of the relic, for not only is it inconceivable that a forger in the middle Ages could have produced so anatomically perfect a figure, and have done it as a perfect and almost stereoscopic negative (indeed the concept of a negative is hardly possible before the invention of photography, and the artificial painting of one would have been pointless), but also some of the features of the image on the shroud are not such as a forger would have invented, for they run contrary to tradition. The wounds, for instance, are in the wrists (as they would have to be to support the weight) not in the palms (as universally represented in art). One leg, too, seems shorter than the other. Though photography shows that this is due to the contraction of the leg, this is quite indecipherable on the linen. A

forger would not have wished to represent Christ as a cripple—not in the W., though rumours to that effect in the E., and the strange Byzantine curve on oriental crucifix pictures, may have originated from the shroud when it was anciently preserved in Palestine or Constantinople. It really seems true that Providence has provided this scientific and sceptical age with the

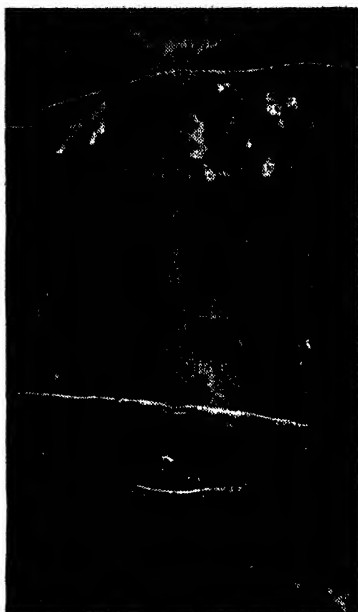


Photo by G. Enrie, Turin

THE FACE OF CHRIST FROM THE HOLY SHROUD

direct scientific testimony it appreciates to the Passion and Crucifixion, and possibly the Resurrection (see Dr Pierre Barbet, 1950, but compare Paul Vignon, 1939 and 1946). The face revealed by the photograph of the H. S. is of su-
m majesty, the nose slightly t-
as by a blow, the hair long, the l-
laced with blood, the beard slightly
forked. It is very like the traditional
conception of the appearance of Christ,
which began to spread after the conversion
of Constantine, when the H. S. perhaps
was brought out of hiding. The H. S. may
have been the source of that conception,
as also of the legend of St Veronica. See
E. Wuenschel, *Self-Portrait of Christ*,
1954; L. Fox, *The Holy Shroud*, 1956.

Holy Spirit, The, Holy Ghost, or Paraclete, in Christian theology, the Third Person of the Blessed Trinity. Fore-shadowings of the Christian doctrine are found in certain parts of the O.T., as, for instance, in Gen. i. 2, 1 Sam. xvi. 13, and Joel ii. 28 ff., quoted as a prophecy of the descent of the H. S. at Pentecost in Acts ii. 17 ff. In the N.T., however, the H. S. is spoken of in a way that makes His Divinity and distinct personality clear, as in 2 Cor. iii. 16 ff., 2 Tim. iii. 16, Gal. v. 22, etc. Matt. xxviii. 19 and 1 Pet. i. 1-14 speak of the H. S. as distinct from the Father and the Son, while His Personality is insisted on in John xiv. 16 ff. and John xv. 26, 'But when the Comforter is come whom I will send unto you from the Father, even the Spirit of truth, which proceedeth from the Father, He shall testify of me.' Here we have also a reference to the Procession of the H. S., which caused such serious misunderstandings between the E. and W. churches in later centuries. The E. condemned the churches of the W. for the addition of the Filioque clause (q.v.) in the Nicene Creed, and they further denied that the procession of the H. S. was 'from the Father and the Son.' It must be pointed out, however, that there is probably no real doctrinal difference involved, as the W. has never held that this addition to the Oecumenical Creed teaches a Dual Procession, but rather a procession from the Father *through* the Son. This doctrine E. theologians would endorse. Many questions relating to the H. S. are bound up with the controversies as to the Holy Trinity which occupied the mind of the Church in post-Nicene times. The most important results, embodied in the Athanasian Creed and the additions to the Nicene Creed, lay stress on the *personality* of the H. S. See H. Swete's article in the *Dictionary of Christian Biography*, 1877, and the same writer's *Holy Spirit in the New Testament*, 1909, and *Holy Spirit in the Ancient Church*, 1912, also any systematic works on Christian theology.

Holy Water, water blessed by a bishop or priest for ceremonial purposes. Water is naturally used as a symbol of spiritual cleansing, and Tertullian tells us that the habit of using H. W. was common very early in the Christian Church. In the Rom. Catholic Church a solemn blessing of H. W. occurs on Saturday in Holy Week with special ceremonies, but the blessing of water by a simpler rite may be performed by a priest at any time. Before High Mass on Sundays the priest sprinkles the congregation with H. W. while the choir sings '*Asperges me.*' It is also used at funerals, in blessings, etc. Salt is mixed with the water when it is blessed. For H. W. at the church entrance, see Strop.

Holy Week, week immediately preceding Easter in which the events of the last week of our Lord's life on earth are commemorated. H. W. begins with Palm Sunday, when palms are blessed in commemoration of Christ's entry into Jerusalem. On Maundy Thursday white is

used at the Mass, because on that day Christ instituted the Blessed Sacrament, but immediately afterwards the altars are stripped and washed. No Mass is celebrated on Good Friday or Holy Saturday, but Communion is given from the Reserved Sacrament in the Liturgy of Good Friday after the veneration of the Cross. The Easter vigil is celebrated on Saturday at such a time that the third part, the Mass, can begin about midnight.

Holycross, par. and vil. co. Tipperary, Ireland, 20 m. NW. of Tipperary; much visited for its magnificent ruins of a Cistercian abbey. The dist. is very fertile and there are good pastures. Pop. 1000.

Holyhead, seaport and mkt in on Holy Is., Anglesey, North Wales. It is the most important mail-packet station for Ireland and is the starting point of the B.R. steamers to Dublin, with connections for Greenore. It possesses a fine harbour, with an area of 267 ac., begun in 1846 and finished in 1873, and a breakwater 1½ m. long. This refuge is extended by 400 ac. of roadstead. There are a wireless station and a fine old embattled church (St Cybil). Pop. 10,700.

Holyoake, George Jacob (1817-1906), agitator, the son of a Birmingham engineer, at the age of 15 became a Chartist. Later he went about the country lecturing, and having decided that the evidences of Christianity were insufficient, he made remarks in public for which he was charged with blasphemy and imprisoned for 6 months. Subsequently his energies were mainly devoted to social reform and the persistent advocacy of co-operation. He wrote a *History of Co-operation in England*, 1875, and biographies of Tom Paine, Richard Carlisle, Robert Owen, and John Stuart Mill, as well as many pamphlets on controversial subjects. His autobiography is entitled *Sixty Years of an Agitator's Life*, 1892. See life by J. McCabe, *The Life and Letters of Holyoake*, 1908.

Holyoake, Keith Jacka (1904-), New Zealand politician, b. Pahiatua. Himself a farmer, he has served on numerous agric. committees. He entered the New Zealand parliament in 1932 as the National member for Motueka; in 1947 he was deputy leader of the opposition, and when the National party was returned to power in 1949 he attained cabinet rank in the Holland gov. as minister for agriculture and deputy prime minister. On the resignation of Holland in Sept. 1957, H. became prime minister, but in the ensuing general election (Nov. 1957) the Labour party under Walter Nash (q.v.) was returned and H. went into opposition.

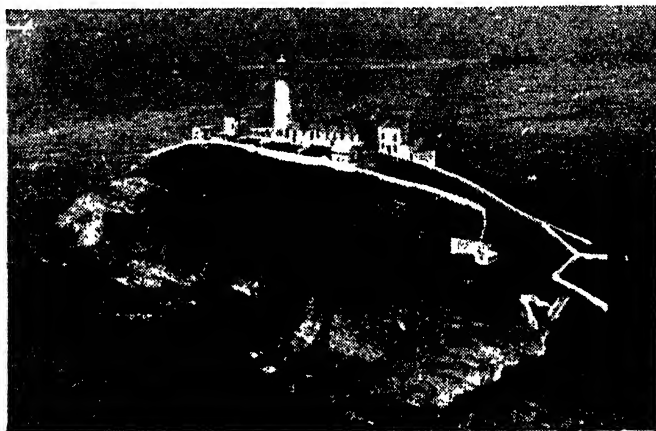
Holyoke, city on the r. b. of the Connecticut R., 7 m. N. of Springfield in Hampden co., Massachusetts, U.S.A. An insignificant vil. till 1849, it rapidly became a thriving industrial centre when a huge dam was constructed so as to utilise the power of falls on the Connecticut R.; a second and larger dam was built in 1900. The first tn in America to manuf. paper, H. is noted also for its textiles, machinery,

steel products, and electrical supplies. Pop. 54,660.

Holyrood, name of the royal palace of the Scottish kings. Begun by James IV in 1501, the palace was a residence until the Union. All except the NW. wing was burnt in 1544, and the greater part of the present palace was built in 1670-9 for Charles II. The palace is open to the public, who are shown where Mary Queen of Scots slept, and where Rizzio was murdered. Bonnie Prince Charlie danced in the picture gallery (1745) when he made the palace his H.Q. Adjoining the palace are the ruins of H. Abbey, founded

Holywell Street, London, which formerly ran parallel to the Strand (q.v.) between St Mary's and St Clement Dane's churches, demolished in 1900-1 as part of the Strand widening scheme. It was named after a holy well near by. In early times the residence of silk merchants, it was latterly notorious for the number of booksellers who made a livelihood by selling coarse and obscene literature.

Hollywood, picturesquely situated seaport, co. Down, Ireland, 4½ m. NE. of Belfast. Here took place (1644) the signing of a solemn league and covenant for the defence of the kingdom. The priory



British Railways

SOUTH STACK LIGHTHOUSE, HOLYHEAD

(1128) by David I. The monastery: which was built in the Norman and early Gothic styles, was dissolved at the Reformation, when the chapel became a par. church until James II (of England) made it a chapel royal (1687). Since 1768 it has been in ruins.

Holytown, tn of Lanarkshire, Scotland, 14 m. NNE. of Lanark. Situated in the most productive region of the Lanarkshire mineral deposits, its coal mines and steel works are valuable. Pop. 3300.

Holywell, mkt. and industrial tn in Flintshire, North Wales, 4½ m. WNW. of Flint. It is served by the railway, and besides lime quarries has zinc, lead, and copper ores, and artificial silk, paper, and textile works. Close by are the ruins, largely Early Eng., of Basingwerk Abbey, founded c. 1131. H. is named after St Winifred's Well, long a resort for pilgrims and invalids in search of a miraculous cure. A Gothic chapel covers the spring. Pop. 8150.

Holywell (Northumberland), see SEATON VALLEY.

church dates from the 12th cent. The tn has the only permanent Maypole in Ireland. Pop. 7000.

Holzminen, riv. port in the Land of Lower Saxony (q.v.), Germany, on the R. Weser (q.v.), 34 m. N. of Kassel. H. manufs. furniture, machinery, and other products. It was formerly in the Prussian prov. of Hanover. Pop. 19,900.

Homa, see SOMA.

Hommage, in feudal times, the formal expression (*homo vester devotio*, I become your man) of allegiance of a vassal to his lord. Noblemen at a coronation and bishops on appointment do H. to the sovereign.

Homburg, Ger. tn in the Land of North Rhine-Westphalia (q.v.), on the Rhine opposite Duisburg (qq.v.). It has coal-mines, iron-foundries, and dyeworks. Pop. 34,000.

Homburg, Bad, or **Homburg vor der Höhe**, Ger. spa in the Land of Hessen (q.v.), on a SE. spur of the Taunus Mts (q.v.), 20 m. NE. by E. of Wiesbaden. It has notable Rom. remains, including a

reconstructed camp. There was severe damage during the Second World War. Pop. 28,000.

Home, Daniel Dunglas (1833-86), Scottish spiritualist, b. near Edinburgh; brought up by an aunt in America, where in 1850 he was already practising as a medium. For persistence in this form of activity he was in 1864 excommunicated by the Rom. Catholic Church, which he had joined some years earlier. The remainder of his life was spent giving séances in England and on the Continent, especially in Russia, where he had an audience with the Czar. Browning, who was present at some of H.'s meetings, records his unfavourable impressions in *Mr. Sludge the Medium*, 1864. See Jean Burton, *Heyday of a Wizard*, 1948.

Home, Earls, of title of an historic Scottish border family. **Sir Alexander Home** (d. 1491) was created a peer by James III, but afterwards joined the nobles against the king. His great-grandson, **Alexander**, the 3rd Lord H. (d. 1516), was chamberlain to James IV; he escaped with his life from Flodden, and was enticed to Holyrood by specious offers from Albany, the regent, and summarily executed for treason. **Alexander**, the 6th Lord H. and the 1st earl (created 1605), carried on endless feuds with the Hepburns when he was Warden of the Marches. The 11th earl (succeeded 1841) married the Douglas (q.v.) heiress, since when the family has been known as Douglas-Home. The present (14th) earl is **Alexander Frederick Douglas-Home**, who succeeded his father in 1951. He became secretary of state for commonwealth relations in April 1955.

Home, John (1722-1808), dramatist, b. Leith, son of the t. clerk. Educ. at Edinburgh Univ., he served as a volunteer in the 'Risings of '45, and 2 years later became minister of Athelstaneford, but in 1757 he retired from his charge. He made many acquaintances with literary folk, was introduced to Lord Bute, and for some years served as his private secretary. In 1802 he pub. a *History of the Rebellion of 1745*, but it is as a dramatist he is best known. His prin. plays were: *Agis*, 1758, *The Siege of Aquileia*, 1760, *Alonso*, 1773, and *Alfred*, 1778. His first drama, *Douglas*, produced at Covent Garden in 1767, with Barry and Peg Woffington in the cast, was his greatest success, and it is still remembered for the speech beginning 'My name is Norval,' which was long a favourite recitation. Then hailed as a second Shakespeare, he has since taken his place as a very mediocre writer, and his works no longer hold the stage. See A. E. Gipson, *John Home, a study of his Life and Works*, 1917.

Home Counties, term used to denote the cos. of Berkshire, Buckinghamshire, Essex, Herts, Kent, Middx, and Surrey (qq.v.). They are so named as being the nearest to London.

Home Guard, or Local Defence Volunteers, volunteer defence force, recruitment for which began officially in May 1940 in response to the war minister's call in the

emergency of that time, when it was becoming obvious that Britain was not immune from possible invasion. While hist. provides no parallel to the speed and enthusiasm of its recruitment, the muster of all men between 17 and 55 in 1803, under a Levee en Masse Act, was in fact a precedent. The inception of the L.D.V. or H.G. was a spontaneous movement based on this and other historic precedents, including the volunteers of the period of the Napoleonic wars, the volunteer movement of 1859, and the volunteers of the First World War. The chief difference between the H.G. and any other form of military force raised in the Brit. Isles since 1803 was that, whereas the others, e.g. Sir John Firebrace's Horse, the Militia, the Wemyss Volunteers, and the Territorial Force or Army, had been kept away from the front line until they were deemed sufficiently trained to meet the enemy, the H.G. was expected, and themselves expected, to meet the enemy wherever he might show himself in the country. But, of course, a great number of those who joined had seen service in the First World War. Men liable to be conscripted in the normal way were of course ineligible for the H.G. At first the H.G. was hardly an effective force at all, for no arms were available for their equipment other than a few thousand rifles and shot guns, old pikes and sabres and some army revolvers and long-barrelled Amer. revolvers used for clay-pigeon shooting. The formation of the H.G. at that moment in the nation's dilemma has been not inaptly called a gigantic bluff but, in view of the possible descent of Ger. parachuteists armed with grenades and Tommy-guns at vital spots such as factories, railway bridges, petrol dumps and Ordnance depots, the muster of H.G., albeit crudely armed, was better than no force at all for the purpose of supplementing the relatively few regular troops—the bulk of the regular divs. being in France or in the Middle E. On 11 May the General Staff accepted, in principle, the proposals for the formation of a defence force on a tn and vil. basis, giving latitude to local enterprise so as to launch the scheme with the minimum of delay, and this indeed was the scheme on which the force was subsequently founded. In fact, even before the secretary of state for war on 14 May broadcast his call for volunteers, the civilian pop. in certain parts of the country were forming themselves into bands to deal with hostile parachuteists, and the aim of the military authorities was to get this valuable movement on a regular footing as quickly as possible. It was on 11 May at a conference at the War Office that the name 'L.D.V.' was chosen but the popular name, 'Home Guard' was adopted 2 months later. The military authorities agreed on 14 May that the H.G. would form part of the armed forces of the Crown and would be subject to military law. The salient features of the scheme were simplicity, decentralised control, and the minimum of formalities. There was to be no estab. and no pay,

though travelling allowance was given. Nor were there to be any officers or n.c.o.s in the ordinary Army sense. Volunteer organisers were to elect and nominate to the Area Command individuals for appointment as company commanders. Arms, ammunition, and uniforms were to be issued under Command arrangements. It was on this incomplete and tentative basis that the secretary of state for war's appeal was made and it was fully justified by its results. The equipment originally envisaged for the H.G. consisted of a rifle,

the elderly and unfit, and the average age of the H.G. was by that time slightly under 30. They were now fully armed and trained, able to use their weapons which ranged from the bayonet to the 3.7 gun and yet remained the most inexpensive of military forces, a fact largely due to the patriotism and generosity of private individuals. The H.G. was disbanded, 31 Dec. 1945. Parades, however, ceased in Sept. 1944 and orders issued for the H.G. to stand down on 1 Nov. 1944. Delay in the formal



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A HOME GUARD MARCH-PAST IN AN ENGLISH VILLAGE: YALDING, KENT

bayonet, steel helmet, and arm brassard to be worn with civilian clothes. In fact even this equipment was beyond the actual possibilities at the time and it is said that when the official appeal was made the stock of rifles available in Britain was no more than 70,000 in all. The actual numbers of the H.G. in the early summer of 1943 approached 2,000,000. But by that time men could be compulsorily directed to serve if they were of an age and condition that justified that course. There were about 1000 battalions. The number of H.G. anti-aircraft batteries—for in the intervening years many had been directed to this role—was large and there were 43,000 officers in the H.G. General Service units A.A. Batteries. It is stated on good authority that, by 1943, only 7 per cent of the men were ex-servicemen, this reduction being due to the elimination of

disbandment was due to the necessity of facilitating the recall of arms and equipment. Officers were given honorary rank in the highest rank they held for an aggregate period of 6 months. The H.G. was reformed in 1951 and by the end of 1955 there were 36,000 active members, with 42,000 on the reserve roll. In 1956 it was decided to place the H.G. on a reserve basis with an active cadre only. All activities were suspended in 1957. See C. Graves, *The Home Guard of Britain*, 1943.

Home Laundry. The aim of the housewife undertaking home laundering should be to render garments and linens clean, fresh, and crisp, without in any way damaging the fabrics. In preparing for the work she should divide the clothes according to their material—woollens, white cottons and fast colours, loose colours, silks, rayons, synthetics, table

linen, and rough cloths (dusters, oven cloths, etc.).

Method.—Wash the white and fast coloured cottons, using hot water and soap or soapless cleanser; rub the soiled parts well with the soap; use a rubbing board, but brush only the very dirty parts of the material; rinse well and boil in a copper of water, to which grated soap has been added, until a good lather appears. While the clothes are boiling wash the silks, rayons, and synthetics, then the woollens, beginning with those that are cleanest, in warm soapy water; keep the garments under the water whilst kneading and squeezing; do not rub as this causes felting of the fibres; place any very dirty parts flat on the hand and pat the soapy lather through them; rinse in 2 waters of the same temp. as the washing water. It is unwise to wring woollens, silks, rayons, and synthetics through the hands—they should be squeezed to remove the bulk of the water, and then put through a rubber wringer, or beaten out in an old thick towel. Peg on the line by the upper part of the garment. Soak dusters, etc., in a pail of soapy water, leaving them in this while the other washing is done. Remove the cottons from the copper and rinse in cold water; squeeze a blue-bag in a bowl of cold water until the resultant liquid is just blue in the hollow of the hand, and dip in the cottons which do not need starching; put through the wringer and hang out to dry. Wash the loose-coloured cottons in the same manner as for woollens; then wash the dusters which have been soaking, and any other rough cloths which may have been put with them in the pail of soapy water; when in doubt regarding any material, wash as for woollens.

Starching.—Starch stiffens clothes and has the advantage of preserving their cleanliness. Mix 2 tablespoonfuls of starch in a bowl with 4 tablespoonfuls of cold water; pour on boiling water, stirring all the time, until the mixture thickens and takes on a greyish tinge; to this add 3 times as much cold water as starch mixture. Starch the clothes by opening them out (as in the case of pillow-cases) and place the open ends in the starch first; a convenient order for starching is (a) tray cloths; (b) table-cloths; (c) table napkins; (d) cotton dresses; (e) shirts and collars.

Finishing and ironing.—Only the starched clothes should require damping. Fill a bottle with warm water and insert a perforated cork, or cut 2 strips away from the original cork; open out the articles to be ironed and sprinkle the water evenly over them; fold the articles and leave for an hr; roll up the remainder of the laundry as it dries. Prepare ironing table by placing over it a thick piece of blanket, then tying on an ironing cloth; a skirt and sleeve board may be used for dresses and blouses. For cottons use a hot iron, testing first; a moderately hot iron should be used for silks, rayons, and synthetics. Many of the new fabrics require no ironing at all.

All double parts should be ironed on both sides. Begin ironing with the top half of each garment; iron sleeves, body, then collar. Iron the lower part of the garment arranging any pleats and ironing well into any gathers. Embroidery should be ironed on reverse side, using some pressure.

The equipment required for home laundering need only be of the simplest kind, the essentials being a copper (heated by a coal fire, electricity or gas, or a portable one which may be heated by a gas-ring or even a primus stove), a deep sink, a good supply of hot water, a soft-bristled or nylon-bristled brush, good soap, soapless cleanser, a suction washer (in place of rubbing board if preferred), and the iron (electric, gas, or flat-iron). Electric washing machines are, however, becoming much more generally used and types are available for big institutions and also for the small family. Thermodynamically controlled irons and steam irons are especially useful for modern fabrics, and electric ironing machines are also becoming much commoner in homes. There are numerous commercial soap-powders, detergents, and bleaching powders which are sold with full instructions. See E. Henney and J. Byett, *Modern Home Laundrywork*, 1952; *Laundrywork in School*, 1953. See DETERGENTS; HOME-MAKING; LAUNDRIES; SOAP.

Home Office, Brit. Gov. dept. The powers and duties of the H. O. are of the most varied kind. Chief among its concerns are: the maintenance of law and order, and the efficiency of the police service; the treatment of offenders, including juvenile offenders; the efficacy of the probation service; the organisation of magistrates' courts; legislation on criminal justice; the efficiency of the fire service; the care of children by local authorities and voluntary organisations; the regulation of the employment of children and young persons; the control and naturalisation of aliens; the law relating to parl. and local gov. elections; public safety and public wellbeing; and preparations for civil defence. The Home Secretary deals with all the internal affairs of England and Wales except those specifically assigned to other secretaries of state or ministers. He is the channel of communication between the sovereign and her subjects and between the U.K. Gov. and the gov. of Northern Ireland, the Channel Is., and the Isle of Man. He is responsible for preparing patents of nobility for peers and formal proceedings for the bestowal of honours; for advising the Crown on the exercise of the prerogative of mercy; for the sanctioning of by-laws made by local authorities in so far as they relate to 'law and order' and 'good governance'; for granting licences to experiment on animals; for ordering the exhumation and removal of bodies; for the control of explosives, firearms, and dangerous drugs; for the administration of the state management scheme for controlling the liquor trade in the Carlisle dist.; and for many miscellaneous matters

affecting the internal administration of the country. The Home Secretary is assisted in his duties by 2 parl. under-secretaries, a permanent under-secretary, 7 assistant under-secretaries, and administrative, executive, and clerical staff.

Home Rule. The demand of Ireland for H. R., which was defined by John Redmond as the rule of a local Irish parliament created specially to deal with Irish affairs, was for some 50 years one of the most important issues in Brit. politics. The H. R. movement was a constitutional, not a revolutionary, one, and it was led in turn by Isaac Butt, Charles Stewart Parnell, and John Redmond (q.v.). The demand was first put forward as a definite policy in 1871, but it was not until 1885, after the extension of the franchise, that Ireland returned a majority of M.P.s (85 out of 103) pledged to support H. R. (see NATIONALIST PARTY, IRISH). From that time down to 1893 the Liberal party's adherence to the policy of self-gov. for Ireland was associated with the name of Gladstone (q.v.), who introduced H. R. Bills in 1886 and in 1893. The latter Bill was carried in the Commons, but was defeated in the House of Lords. Its proposals included the setting up of a legislature and executive in Ireland to control Irish affairs, subject to the supremacy of the Imperial Parliament; and there were safeguards to that supremacy in the form of provisions analogous to those of the Colonial Laws Validity Act (see COLONIAL LAW), an express prohibition from dealing with the land question for 3 years, and a reservation of various important legislative matters to the exclusive consideration of the Parliament at Westminster. The depression in the fortunes of the Liberal party which endured thereafter for a period of some years meant that the question of H. R. had to lie dormant until 1906, when a Liberal gov. was again in power. The election of 1906 was generally understood to have been contested on the fiscal issue, the nominees of the Liberal party expressly undertaking not to introduce a H. R. Bill; but in 1907 the Irish Council Bill for the estab. of an Irish body to expend in Ireland the proceeds of Irish taxation was introduced, though afterwards withdrawn. At the two subsequent elections the Liberal candidates made no such declarations of intention, and in April 1912 the third H. R. Bill was introduced by Asquith (see OXFORD AND ASQUITH). This Bill, which passed its second reading by a majority of over 100, was based on the model of the previous Bill, but the financial provisions were more explicit: it estab. an Irish Exchequer and an Irish Consolidated Fund, and provided that the whole cost of Irish gov., with the exception of the expenditure on the reserved services, should be borne by the Irish Exchequer. The Bill passed the House of Commons in Jan. 1913, but was defeated in the House of Lords. It was passed thereafter in 3 successive sessions by the Commons, and so, by the operation of the Parliament

Act, 1911 (q.v.), became law irrespective of the assent of the Lords. The Bill included all the counties of Ulster, and, while it was still before Parliament, met with strong opposition from the Ulster unionists. The resistance to it turned almost into rebellion, 2 of the leaders of the resistance being Sir Edward (later Lord) Carson and F. E. Smith (later Lord Birkenhead) (q.v.). On the House of Lords attempting to exclude Ulster from the operation of the proposed Act, the king made an attempt to bring the various parties together, but without success. By the time the Bill had passed into law the First World War had broken out, and its operation was postponed by the Speaker until after the war. Before anything more was done the position had been changed by the rise of the Sinn Féin (q.v.) party. See IRELAND, *History*; IRISH FREE STATE; CURRAUGH INCIDENT.

Home Rule Movement, Scottish. see SCOTLAND, *Scottish Home Rule Movement*.

Homel, see GOMEL'.

Homemaking, the work of a woman who converts a dwelling place into a home and maintains it as such. The career of homemaker is one of the oldest and the most important in the world and embraces very many widely varied skills and arts. There is very little knowledge that a woman may possess which will not be found of value to her as a homemaker. In every age of the world's hist. her job is of the utmost importance to the nation, and her influence incalculable. From the most primitive times until the 'emancipation of women,' her role as homemaker was taken for granted. At times she became degraded almost to a beast of burden, at other times promoted to a near-queen, but her field of action remained the same. With the emancipation movement, a certain slur or stigma began to attach to a purely domestic career. This is explicable partly as the inevitable swing of the pendulum and partly, also, in the light of the fact that rich women of the preceding generations had become in great measure idle and only nominally homemakers, leaving their work, in fact, to a staff of paid helpers. Nevertheless, this was very unfortunate and far-reaching in its effects on education and popular opinion, and it has only now been partially counteracted by the advances in psychological knowledge which have once more emphasised the prime importance to the race of happy, secure home-life.

Never before has the homemaker's job been so demanding as to-day. Formerly she either had paid help in her work or else her home, her furnishings, and the needs of the members of her household were all very much simpler. Now the almost total absence of domestic help, allied to the growing complexity of life and the much higher material standard of living, has made her work very exacting. Working to her advantage, however, are 2 factors—the enormous increase in home labour-saving appliances of every kind, and the availability of a huge variety of canned and prepared foodstuffs.

The homemaker's work is intimately and directly bound up with the happiness and mental and physical health of her household. There is, literally, no limit to what she can do for them and the limitations of her work are in fact those set by the amount of time, energy, health, and willingness which she is able to bring to her job—hence the old, still true, saying that her work is 'never done.' The practical skills of her work are roughly summed up as housekeeping (including budgeting, marketing, managing the household affairs), housewifery or housecraft (including the cleaning and care of the fabric and contents of the house), cookery, mending and making, and acting as liaison-officer with the civil authorities and the rest of the community in which she lives. But even where she is not actually wife and mother as well, in the nature of things she is frequently confidante and 'referee' to all, and often home nurse and gardener as well.

The aim of the modern homemaker should be to attain satisfactory results within a reasonable time and with the minimum amount of physical labour, thus allowing herself sufficient rest and also time to make her full and valuable contribution to the activities and life of her family. Her aim is thus to achieve a clean, comfortable, well-ordered home, entirely suitable to the needs and income of the family, and also the provision of appetising and nourishing food. Three rules which will facilitate the achievement of her aim are as follows: (1) To do all her domestic chores according to a methodical, carefully-thought-out, and practically-minded skeleton plan of routine, thus minimising both anxiety and neglect of duties. The plan, though detailed, should also be comprehensive enough to embrace a normal year's work, allowing for household 'milestones' such as spring cleaning, preparation for ann. holiday, the Christmas rush, etc. (2) To secure the co-operation as far as possible of every member of the household. Nowadays, when paid domestic help is exceptional and when the homemaker herself is frequently absent for part of the day, this should be looked upon as natural and essential. (3) To adopt all labour-saving methods, both by the thoughtful application of commonsense to individual cases and by the discriminating acquisition of good, modern labour-saving equipment as far as ever means will allow.

CHOICE OF FURNITURE.—This will vary within very wide limits indeed according to personal taste, but rules which should govern all choice are: the best of its kind that can be afforded is the most economical; plain, good design will continue to please whereas showy, 'novelty' furnishing will quickly pall; all furniture should be chosen strictly in reference to the needs and activities of the household, i.e. taking fully into account such factors as the presence of young children, old people, the amount of entertaining envisaged, whether or not the family

expects to remain for a long time in the same house, etc. If limitation of means forbid the buying of all furnishings at one time, as is usually the case, the best way is to buy only the essentials at first, but, before doing so, to make a plan, worked out on paper and as complete in every detail as possible, of each room's proposed contents when fully furnished. Each piece as it is bought should fit in with this finished scheme. (For styles, see FURNITURE.) In practice it often happens that the housewife starts off with certain pieces of furniture either given to her or inherited, etc. Far from cramping her style, with a little skill and ingenuity these can frequently be made the key to her whole furnishing scheme and often lend a desirable note of homeliness and individuality. The biggest pitfall to be avoided in the choice of all furnishings and home equipment is the attitude of mind known as 'keeping up with the neighbours.' This is responsible for an enormous amount of uneconomical spending and results in constant dissatisfaction and a most 'unhomelike' result.

DAILY CLEANING.—A certain amount of daily cleaning is a necessity and should be done as early in the day as possible. It should include the keeping bright of all polished surfaces and a general tidying up. It enables the housewife to make mental notes of special work that is needed. Its arduousness will depend largely on the numbers and the thoughtfulness of the occupants of the house and the state in which they leave their equipment the night before. In no case should a thorough cleansing of the whole house be attempted every day. Ideally, all daily cleaning should commence at the top of the house and work down, finishing with kitchen, etc. Only general rules can here be given and these will require adaptation to the individual problems presented by every household.

General order of daily work.—Prepare room by airing, cleaning fireplace, and relaying fire or making bed. Collect cleaning apparatus. Tidy room, putting away books, clothes, etc. Then sweep, dust, wash, polish—in that order, allowing a pause after sweeping for dust to settle.

To clean a fireplace.—Roll up hearth-rug, turn back carpet, cover exposed floor with newspaper, removing fender and fire irons to one side. Gently sweep soot from back of grate, remove cinders and ashes. If the grate does not have a removable ash tray then put ashes into newspaper-lined bucket and fold in the paper over the top before carrying away. Lay fire with crumpled paper, kindling or fire-lighter, and small lumps of coal at the front. Place any cinders remaining from the night before at the back of the newly laid fire. Rub up any bright surfaces, sweep tiles or wash if necessary, replace all tidily, filling coal box.

Bed making.—The bed should already have been stripped over a chair by the occupant on rising, thus giving it a chance to air. Interior-sprung mattresses

should only be turned occasionally or in accordance with manufacturer's instructions. Those made of rubber latex foam need no turning at all. Those of hair or flock should be turned every few days. Bedclothes should be smooth and creaseless. Bedmaking is a job which is greatly facilitated by 2 pairs of hands.

To clean lavatory, bathroom, and fitted hand basin.—Mop or sweep floors. Flush lavatory and sprinkle with disinfectant-cleanser. Check supply of toilet paper. If lavatory seat is of plastic wash with warm soapy water; if of wood it will need frequent scrubbing on both sides. Wipe the bath or, if necessary, clean with paste cleanser and rinse. Do not use a harsh abrasive on bath or basin as it will damage the surface of the enamel. Dust glass or tiled shelf above basin. Polish shaving mirror. Half fill basin with warm water and wash tooth glass. Wash and wipe basin and soap wells. Rub up taps with dry duster. Clear plug holes frequently. Check soap, tooth-paste, etc. Put all towels to dry or air. Open windows as far as possible.

Special Cleaning.—Each part of the house will need a more thorough cleaning at intervals. Weekly, fortnightly, or even monthly—rotation must vary according to the amount of use made of the rooms and the time at the disposal of the worker. Much time will be saved and much greater efficiency achieved if this special work is always planned the day before. Make mental notes of the particular jobs that most need doing in the room to be tackled. Thus, for example, during one special cleaning of the lounge all books may be given special attention. At the next cleaning the upholstery of settee and armchairs, etc., may be given a specially thorough going over with vacuum cleaner and 'lost treasures,' such as pencils, etc., are often discovered between back and seat. General rules: after cleaning fireplace and washing tiles thoroughly, brush down ceiling and walls with a soft, clean brush. Carefully brush all lamp flexes and shades, etc. Sweep floor. Wash any soiled paintwork on window sills, doors, mantelpiece. Clean windows. Polish furniture and floor. Dust sheets should cover furniture during special cleaning operations unless electric cleaner is used.

SPRING-CLEANING.—Ideally, this should be done after fires have ceased and before hot weather begins—hardly possible always! In early spring, however, make plans for any redecorations and repairs, whether professional or 'home done.' First have chimneys swept, and then attend to redecorations. If possible, employ a sweep who uses the new vacuum method. In any case, order his services well beforehand and at a time when all can be ready when he comes. Even the best methods of chimney sweeping usually cause some flurries of dirt, and the more that can be covered up or removed the safer it will be. If health, temperament, and time schedule allow home decorations to be done by the family, a great deal of

money may be saved and real and lasting satisfaction gained. Nowadays every gadget and aid is available for the home decorator, and a wonderful variety of materials, colours, and textures. The home will be given that personal touch, colour schemes achieved that lead from strength to strength because in doing the work more will be learned than any book can teach. But do not attempt more than can successfully be carried out. Decoration, especially in its preparatory stages of paint scraping or removal, etc., is extremely tiring and time-taking. Much of the smaller spring-cleaning jobs should be worked in before the main drive begins. Chests of drawers can be emptied, dusted, tidied, and sorted at any time before the room is otherwise touched. In the same way, all cupboards, glass-fronted bookcases, bureaux, storage trunks, etc., may be spring cleaned in odd moments. Store away winter clothes and extra bedding, ensuring protection against moths as this is done. General rules: Begin at the top of the house. Clean the least used rooms first. Clean landings, passages, staircase, and hall after the rooms. Clean kitchen, scullery, back premises last. In the cleaning of each room follow rules for special cleaning, but clean *everything in the room*, and behind and under every piece of furniture. Make as much use as possible of the yard or garden. Furniture carried outdoors will look much dustier than in the house and cleaning operations are liable to be more thorough and will certainly be easier and pleasanter to perform. Pictures, ornaments, rugs, carpets—everything should now receive fullest attention. Clocks must have special care, and if moving upsets them then cover very thoroughly.

CLEANING A SICK ROOM.—A sick room must be kept scrupulously clean (see *NURSING, Home Nursing*) and therefore the fewer pieces of furniture the better. Damp tea-leaves, damped and shredded newspaper, or wet sawdust should be sprinkled over the floor before sweeping. If carpeted, then use electric cleaner or carpet sweeper every day. Furniture, ledges, etc., should be wiped with a barely damp cloth and then dried. Replace flower water every day. Move and clean quietly and gently, especially when tending the fire.

CLEANING OF KITCHEN.—The amount of daily and special cleaning needed here will vary greatly according to whether the kitchen is of the roomy, semi-living-room variety where the family meals are taken as well as cooked, or whether it is of the small, modern 'workshop' type. General rules: The kitchen is the heart of the house and the place where dirt and grease collect most quickly. A scrupulously clean kitchen and contents is a safety measure for the whole household. This also applies to larders, meat safes, etc. Therefore, when in doubt, give extra time and care to kitchen cleaning. All cooking utensils and table ware should be steeped in cold water if used for milky

or floury foods, in hot water if for greasy foods. Glass cooking utensils may be scoured with steel wool if necessary. Saucepans should be filled with water immediately after use and washed as soon as possible. Take care not to chip enamel pans. Avoid scouring earthenware casseroles with soda as you may remove the inner glaze. Cake tins should be thoroughly rubbed, while still warm, with absorbent paper—a very efficient labour-saver in the kitchen—and only washed when necessary. All gadgets such as mincing machines, etc., after washing and drying, should be placed in the plate-warming rack or near the fire to ensure complete dryness.

CARE OF WALLCOVERINGS, FLOORS, DIFFERENT WOODS, MATERIALS, ETC.—For the care and cleaning of linoleum, plastic surfaces, polished and veneered and varnished woods, removal of stains, care of different metals, tiles, etc., and all such details, see bibliography.

HOUSEHOLD LINEN.—The supply of household linen is best kept in a dry, airy but unheated cupboard. Repair worn or torn parts immediately. If sent out to a laundry, linen should be checked for repairs when returned. Old sheets, etc., should be kept for dustsheets and cleaning jobs.

FLOWERS AND FLOWERING PLANTS.—Flowers, books, and an open fire are all factors which give an 'aliveness' to a room which other furnishing cannot impart. The custom of having living plants indoors has recently become much more general in England, and wire baskets, stands, and holders of all kinds are available. If time is short, choose the hardiest plants which will put up with smoke and heat. For the plant-lover endless rewarding arrangements are possible on walls, tables, sills, landings. All indoor plants must, however, have their leaves wiped free of dust with wet cotton wool or be put outside on rainy days. They must be regularly watered and specially suitable fertilisers are now on sale to fill their needs. Interest in cut flower arrangement has also greatly increased, and branches, meadow flowers and grasses, seedheads, and vegetable leaves can all be utilised and fit in well with modern furnishing schemes. The appreciative use of flowers and plants in the house is the surest and least expensive way of adding that touch of charm, beauty, and homeliness that, so to speak, crowns the work of the housewife.

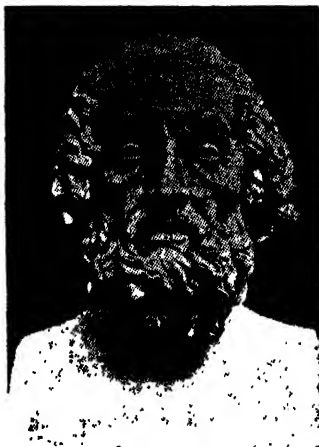
For articles particularly useful to the homemaker see **BUILDING; COOKERY; CROCHET; DOMESTIC SERVICE; DRESS-MAKING; ELECTRICITY IN THE HOME; EMBROIDERY; FLOWER DECORATION; FOOD AND DIET; FURNITURE; HOME LAUNDRY; HOUSE; KNITTING; LAUNDRIES; NEEDLEWORK; SEWING.**

Many of the various materials, e.g. wood, glass, china, porcelain, paper, paint, etc., with which the housewife is dealing daily will be found under their appropriate headings. Knowledge of their manu. and will enrich the

housewife's appreciation of her own possessions.

See Ward, Lock's *Housewife's Handbook*, 1950; M. M. Justin and L. O. Rust, *To-day's Home Living*, revised ed., 1953; G. Lund, *The Art of Home-making*, 1953; Good Housekeeping's *Home Encyclopedia*, 1954; W. Burman and others, *Housecraft*, 1954; National Institute of Houseworkers' pamphlets, *A Simple Guide to Housework and Running Your Home and Doing a Job*, 1954.

Homer, Gk epic poet, b. probably at Smyrna or Chios, and appears to have lived in the late 8th cent. BC; author of the *Iliad* and *Odyssey*. Nothing is known of his life; but many legends, more or less



HOMER

improbable, grew around his name, and he is supposed to have been blind. The works of H. were studied critically in very early times; Theagenes of Rhegium (c. 530 BC) regarded the epics as allegories, so that he might reconcile their principles with the morality of his own time. His theory was accepted by Anaxagoras and Metrodorus. Xenophon, Plato, and Aristotle carefully studied the structure and meaning of the poems, while Antimachus paid attention to the text. The great textual critic of ancient times was Aristarchus. Other Alexandrian critics of importance in this connection were Zenodotus and Aristophanes. The critical emendations and suggestions of Aristarchus are preserved in the *Codex Venetus* in the library of St Mark, Venice (pub. by Villosion, 1788). The unity of *Iliad* and *Odyssey* as poems was almost unquestioned down to the 18th cent. By his pub. of the *Prolegomena ad Homerum* in 1795, F. A. Wolf opened the controversy, which is known as the 'Homeric question'. Wolf held that the *Iliad* and the *Odyssey*

consisted of a series of songs which were not put together until about 500 years after they were composed. He argued that writing must have been unknown to H.; that therefore the songs were passed on from one generation to another orally by the Rhapsodists; that since poems of such length could not be transmitted through centuries without any recourse to writing, the present form of the poems could not be the original form, and that, according to the 'voice of antiquity,' Peisistratus, according to Wolf, 'first committed the poems of H. to writing and reduced them to the order in which we now read them.' It is now generally admitted that the poems were certainly unwritten, whereas it is also agreed that it is possible for poems, even of such length, to have been memorised by the professional trained singers and minstrels of the Grecian courts. There may, at the same time exist in the text many interpolations or deviations from the original form of the poems. Wolf's statement about Peisistratus's collection of the poems has no earlier authority than Cicero (*De Oratore*, iii. 34). The controversy raised by Wolf was at its height during the first half of the 19th cent. Gottfried Hermann, in *De interpolationibus Homeri*, 1832, and *De iteratis Homeri*, 1840, maintained that he was able to distinguish 3 elements in the *Iliad*, a pre-Homeric element, a Homeric, and a post-Homeric. Lachmann went so far as to divide the *Iliad* into 18 lays, and declared that the original lays had been broken up by interpolations and finally put into shape by Peisistratus. The Wolfian theories were strongly opposed by Nitzsch in his *Meletemata*, 1830, and *Die Sagenpoesie der Griechen*, 1852. Welcker, in *The Epic Cycle*, showed the early cyclic writers had been influenced in the structure and substance of their epic poems by the *Iliad* and the *Odyssey*; and that the latter in their present unity of form must be dated before the cyclic writers.

The question as to whether the *Iliad* and the *Odyssey* were written by the same author was first raised by Xenos and Hellanicus, called the Chorizontes or Separators. The chief arguments which have been raised in favour of a sole authorship of the 2 poems are as follows: It is wonderful enough that in a primitive age there should have arisen a supreme genius near whom none can be placed in the world's literature save Dante and Shakespeare; but that 2 poets of such greatness should have lived then seems improbable indeed. It is also argued that though there must be some difference in style between the *Iliad*, a poem of war, and the *Odyssey*, a poem of peace, the great outlines and essential styles of the 2 poems are similar, whereas each is wholly different from anything else produced by the writers of ancient Greece. The early Chorizontes argued in favour of 2 authors, by pointing out certain discrepancies between the 2 poems, such as the fact that the wife of Hephaestus in the *Iliad* is Charis, while she is Aphrodite in the

Odyssey. Modern scholars have based their arguments in favour of a later date for the *Odyssey* (and, therefore, a different author) on differences between the 2 poems of vocabulary, grammatical forms, of treatment of the heroic legends, of institutions, political and social, and of religious or moral outlook. The best modern scholars, however, tend to recognise an over-all unity within and between the 2 poems. See the ed. of D. B. Monro and T. W. Allen, 1908. There is a complete verse trans. of both poems by S. O. Andrew and M. Oakley in Everyman's Library. See also G. G. A. Murray, *Rise of the Greek Epic*, 1884; J. T. Kakridis, *Homeric Researches*, 1949; H. L. Lorimer, *Homer and the Monuments*, 1950; C. M. Bowra, *Heroic Poetry*, 1952. See also GREEK LITERATURE.

Homer, Winslow (1836-1910), Amer. landscape painter, b. Boston, Massachusetts. During the Civil war he painted war pictures, among which was 'Prisoners from the Front.' He excelled in marine studies in water-colour and distinctively Amer. pictures of popular life. He was elected National Academician, 1885. Among his best known works are: 'Life Line', 1884, 'Launching the Boat', 1884, 'The Look-out', 1897, 'The Maine Coast'.

Homestead, bor. in Allegheny co., Pennsylvania, U.S.A., on the R. Monongahela opposite SE. Pittsburgh. It was founded in 1871, and was incorporated in 1880. Here are some of the famous iron and steel works of the Carnegie Company, which rank with the largest in the world, but most of the works are now in adjacent Munhall bor. At these works in 1892 occurred a tremendous strike, the rioting in connection with which had to be quelled by state troops. Pop. 10,050.

Homicide, Justifiable. H. is justified by the Eng. criminal law in the execution of a criminal; in the prevention of a 'forcible and atrocious crime' (e.g. rape); and in the case of an officer of justice killing a person who prevents him from carrying out his duty. It is distinguished from excusable H., though the effect (acquittal) of the latter is the same. H. is excusable in self-defence, or when it occurs by accident. See MANSLAUGHTER; MURDER; INSANITY.

Homildon, or Humbleton, Hill, one of the Cheviot peaks, 1½ m. W. of Wooler, Northumberland, England. It was the scene of the battle (1402) in which Hotspur (q.v.) and the earl of March defeated the Scots under earl Douglas (q.v.).

Homily, discourse, a sermon addressed to the congregation in a church. It was customary in the Jewish synagogues after the reading of the law for an explanatory discourse to be given, and this practice was early adopted by the Christian Church. The Alexandrian school was particularly rich in such exegetical expositions, the most famous ancient collection of H.s. being that of Origen in the 3rd cent. The H.s. of the Church of England are an official collection of sermons (see Article XXXV.) that may be used in church. The first

was pub. in 1547, the second in 1583.

Homocyclic Compounds, organic ring compounds in which all the atoms composing the ring or rings are atoms of carbon. Examples are benzene, naphthalene, and anthracene (q.v.).

Homoeopathy (Gk *homōios*, like; *pathos*, disease), name given to a system of medicine introduced by a Ger. physician, Samuel Hahnemann (q.v.), who was b. at Leipzig in 1755 and d. in 1843. In his *Organon of Medicine*, Hahnemann set forth the principles on which his system was based. These were: (1) That morbid conditions are cured by the same medicines which would produce the disease in healthy bodies, in accordance with the old belief expressed by the Lat. phrase 'Similia similibus curentur' (let like be cured by like). (2) That drugs administered should be simple and not compounded. (3) That in most cases only very small quantities of the drug should be given, on the theory of dynamisation, or increase of force with diminution of matter, such dynamisation, it is alleged, being produced by trituration (i.e. grinding to a fine powder) and by extreme dilution. There are very few followers of H. at the present-day. In contradistinction to H., the ordinary method of treating disease is described as *heteropathy* or *allopathy*. See also **HAHNEMANN** and **MEDICINE**. See T. L. Bradford, *Life and Letters of Hahnemann*, 1895; J. H. Clark, *Hahnemann and Paracelsus*, 1923, and *Constitutional Medicine*, 1926; E. A. Neatby and T. G. Stonham, *A Manual of Homoeotherapeutics*, 1948.

Homocuteleuton (Gk *homōios*, like; *teleutē*, end) is a figure of speech in which a series of words is used with the same or similar endings. This was at one time considered an elegance, as in Cicero's line 'O fortunatam natam me consule Romam!' which has been rendered 'O lucky Roman state, born in my consulate!' But the jingling effect of similar endings, in expressions like 'the pleasures of leisure' or 'to amass a mass of statistics' is now regarded as a blemish in serious writing. See also **FIGURE OF SPEECH**.

Homogeneous and Heterogeneous are 2 mathematical terms. The former is applied to magnitudes which are commensurable, and in algebra to all terms of the same degree, as for instance x^2 and y^2 . The word is Greek for 'of the same kind.' 'Heterogeneous,' which is Greek for 'of a different kind,' describes a group of incommensurables, e.g. spheres and plane circles, or algebraic expressions which are not of the same degree, e.g. $ax^2 + bx^2 + cx + d$, etc.

Homoi-ousios (to be carefully distinguished from **Homo-ousios**, for which see **CONSUBSTANTIAL**), Gk theological term which became a party word during the Arian controversy. It is derived from the words *homōios*, 'like,' and *ousia*, 'substance.' The moderate or Semi-Arians, unwilling to say that the Son was of a different substance from the Father,

wished to use the phrase 'of like substance.' See **ARIUS**; **ATHANASIUS**; **CONSUBSTANTIAL**; **TRINITY**.

Homologation, in Scots law, denotes an act by which a person signifies his approval of a deed so as to make it obligatory upon him in spite of any defects in it. A common instance of H. occurs where a person capable of consenting approves a deed granted by him at a time when he was legally incapable of giving his assent to its terms, as e.g. by a minor on his attaining majority in respect of a grant made during minority without the consent of his curator. But to be valid H. must be an act from which it may be clearly inferred that the person homologating both knew and approved the contents of the instrument.

Homologous Series, in chem., a series of similar organic compounds, any 2 consecutive members of which differ in molecular constitution by 1 carbon atom and 2 hydrogen atoms. There are sev. such series, and owing to a certain amount of similarity of constitution the substances forming them are conveniently studied by reference to their particular series. For example, the paraffins comprise the following bodies: methane, CH_4 ; ethane, C_2H_6 ; propane, C_3H_8 ; butane, C_4H_{10} ; pentane, C_5H_{12} , etc. It is seen that each member contains 1 atom of carbon and 2 atoms of hydrogen more than a molecule of the preceding member, and the series as a whole may be represented by the algebraic formula $\text{C}_n\text{H}_{2n+2}$. The homologues, or members of a H. S., may usually be obtained by similar methods, and they are alike in their general properties. Other H. S. are the olefines, general formula C_nH_{2n} ; the acetylenes, general formula $\text{C}_n\text{H}_{2n-2}$; the monohydric alcohols, general formula $\text{C}_n\text{H}_{2n+1}\text{OH}$; the aldehydes; fatty acids, etc.

Homology, in biology, conformity of organisation which is suggestive of development or inheritance from a common ancestor, and is used as one of the morphological arguments which support the Darwinian theory. H. may be indicated by members of the same class, resembling one another in their general plan of organisation, as in the case of the mouth parts of insects, though these show innumerable varieties of form and use, or as in the case of the general structural resemblance of the arm of man, foreleg of horse, wing of bird, flipper of seal. *Serial homology* (also called *metamerism* or *metameric segmentation*) is shown when successive portions of one individual appear to be developed from the same basic plan, e.g. the segments, or rings, of the body of a worm. See **MORPHOLOGY**.

Homoptera, name given to one of the 2 sub-orders of Hemiptera (bugs) (q.v.), whose members differ from those of the Heteroptera in that their wings cover the abdomen in a rooflike manner and both pairs of wings are alike (hence H. = similar wings; Heteroptera = different wings). The basal and apical parts of the wings are generally of the same consistency,

and sometimes all 4 wings are transparent; the head is furnished with 8 ocelli (simple eyes) placed triangularly on the summit, and the front of the head is bent over, touching the coxae (basal joints) of the front legs. This sub-order includes the Cicadidae, Gulgoridae, Membracidae, Cercopidae, Jassidae, Psyllidae, Aphidae (green flies), Aleurodidae, and Coccidae (e.g. the cochineal insect).

Homs: 1. Or Hims (ancient *Emesa*), city of Syria, near R. Orontes, 63 m. NE. of Tripoli, cap. of the sanjak of H. The modern city, built of black basalt, is mean, dirty, and crowded, and is surrounded by half-ruined walls. The only ancient relics are columns, inscriptions, foundations, and fragments of pavements. There is considerable trade in silk, cotton, oil, gold ware, and sesame. In ancient times, as *Emesa*, it was famous for its Temple of the Sun, of which Heliogabalus, emperor of Rome 218-22 was a priest. In 272 the Emperor Aurelian defeated Zenobia here. It was taken by the Saracens in 636, and by the Crusaders in 1098. Ibrahim Pasha defeated the Turks here in 1832. H. is an important road and rail centre for Tripoli, Aleppo, and Palmyra. Pop. c. 280,000.

2. Formerly *Lebda* (ancient *Leptis Magna*), tn of Tripolitania on the N. coast of

China, bounded on the N. by Hupel, on the S. by Hupel, on the E. by Anhui, and on the W. by Shanxi. The country is traversed by the Funiu Shan Mts, running E. and W. in the SW. part of the prov., and by the Yellow R. running W. and E. at its N. tip. It is very densely populated, largely owing to the fertility of the soil. The chief products of the prov. are cotton, wild silk, cereals, and fruit. Coal is found near Loyang, Tsiaotsu, Juchow, and Lushan; other minerals are iron, sulphur, and saltpetre. H. is historically the 'Central Plain' of China, and boasts 3 ancient empires, dating from imperial times: the Great City Shang (Anyang) of the Yin-Shang dynasty (1766-1122 BC); Loyang of the E. Chou (770-249 BC) and Later Han (AD 25-219) dynasties; and Kaifeng of the N. Sung dynasty (960-1126). The countryside is studded with tombs of ancient kings and nobles, and is a rich field for archaeologists. The earliest Chinese script, on oracle bones (see CHINESE LITERATURE), was unearthed in H. The prov. is traversed E. and W. by the Lung-Hai railway, S. and N. by the Peking-Hankow railway. Much industry, including textile and tractor factories, has been developed since 1950. Area 66,469 sq. m.; pop. 44,214,594 (1954). Cap. Chengchow (q.v.).

Honda, tn (altitude 690 ft) of Tolima Dept., Colombia, on the Lower Magdalena R., 60 m. NW. of Bogotá, to which it is joined by road, rail, and air. The riv. is navigable up to the falls at this point. The tn is an old Sp. settlement with picturesque streets. Pop. 12,500.

Hondecoeter, Melchior d' (1636-95), Dutch painter, b. Utrecht, a pupil of his father, G. de H., and uncle, Jan Baptist Weenix. He was a skilful painter of still-life and birds, depicting the latter with great sympathy. His most famous painting, 'The Floating Feather,' hangs in the Amsterdam gallery. H.'s paintings may be seen in the National Gallery, London, and in the Liverpool, Berlin, Dresden, Hague, Paris, Leningrad, Florence, Venice, and Vienna galleries.

Hondo, see JAPAN.

Honduras, rep. of Central America, lying between the Caribbean Sea on the N., Nicaragua on the S. and E., and Guatemala on the W. It is between lat. 13° and 16° N. and long. 83° and 89° W. Area about 43,227 sq. m. The country is mountainous, forming an elevated tableland of an average height of 7000 ft, rising to 10,120 ft in the case of Montaña de Selaque in the W. The Cordilleras are continued from Nicaragua (q.v.) into the S. portion of the country. The highlands of H. are not so high as those of Guatemala (q.v.), to which they are closely related geologically. The volcanic plateau, with its flows of dark-coloured lava and its beds of ash, faces with the steep escarpment toward the Lempa Valley of Salvador. The highest elevations are in S. H., near La Esperanza and Tegucigalpa, where there are sev. peaks about 8000 ft high, notably El Picacho. There are a few inter-montane basins composed of gently



E.N.A.

LEPTIS MAGNA: COURTS OF JUSTICE

Africa, 60 m. SE. of Tripoli (q.v.). It was once a Phoenician colony and main trading centre for routes into the Sahara. There are imposing Rom. remains. Pop. 35,000.

Honan, one of the central provs. of

rolling, hilly surfaces which lie at elevations between 300 and 4500 ft. Block ranges, similar to the central highlands of Guatemala, are found in N. H. The chief valleys are the plain of Comayagua, and those formed by the rivs. Humuya and Goascorán. The former is a trib. of the Ulúa, the largest riv. in the country, which flows N. into the Gulf of H. It is navigable for 125 m. from the mouth, and waters a prosperous area, through which the main roads and railway run across country. Other important rivs. are the

The chief culture is that of bananas, which are grown on the Atlantic coast. In 1954-5, 7,274,000 stems were exported, mostly to the U.S.A. Panama hats, footwear, cigars, and soap are the chief manufs. The mineral resources of the country—which comprise gold, silver, platinum, copper, antimony, zinc, etc.—have not been developed on a large scale apart from silver; only gold and silver are now mined. Brown coal seams have been found. There are rich fisheries as yet undeveloped, and Turneffe sponges are



E.N.A.

HONDURAS REPUBLIC: A TOBACCO CARAVAN PASSING THROUGH A SMALL TOWN

Segovia, forming the boundary with Nicaragua, the longest riv. in Central America; the Nacome, Aguán, Río Negro, and Choluteca. The chief ls. belonging to H. are the Bay Is., and Tigre, Sacate Grande, and Güegüens in the Bay of Fonseca. The climate along the Atlantic coast is oppressively hot, but on the highlands the temp. is mild. Cattle-rearing is the chief industry of the inhab., but breeding is not carried on scientifically. The woods yield valuable timber; H. has an abundance of hard and soft woods. Mahogany and other hardwoods grow in the N.E. part of the country, in the valleys, and near the S. coast. The most important hardwoods, other than mahogany, are grenadino, guayacán, walnut, and rosewood. Stands of pine occur widely in the interior. Bananas, coconuts (from Bay Is.), oranges, lemons, maize, tobacco, coces, indigo, and sugar are cultivated.

the finest in the world. Total trade of the rep. in 1954 was: imports, £15,800,000; exports, £15,600,000.

Cape H. was discovered by Columbus in 1502, and became a Sp. colony. Comayagua, in the rift valley, was for a long time the leading tn of the highlands of H. Founded in 1540 on the road between the silver mines and Guatemala, it became the political centre of this part of the Sp. domain, and continued to perform the functions of local administration until Tegucigalpa was selected as the cap. of independent H. in 1827. The settlements which are grouped in the valley around Comayagua, like those farther W., grow maize for local subsistence, and produce coffee and cattle for sale. In 1821 H. threw off the Sp. yoke and joined the Federation of Central America. In 1838 it became an independent state, and was subsequently involved in frequent

wars with Guatemala. It has suffered from internal strife, particularly during the civil wars of 1883 and 1903. In 1907 war was declared against Nicaragua, in which Bonilla, the Honduran president, was defeated. In 1911 that general was re-elected president. There was a rising in 1931 in the N. due to unrest among the banana plantation workers led by Gen. Ferrera, who was killed by gov. troops. A Congress of Deputies composed of 56 members is elected for 6 years by popular vote and is in session for some 2 months of the year. The executive power is vested in the president, who is nominated and elected for 6 years. When Congress is not sitting, affairs are directed by a permanent Commission of some 5 members—a modification of the Constitution which dates from 1924 (and further modified in 1936). The administration is in the hands of a council of ministers. There is a small army and air force. The National Univ. is at Tegucigalpa (q.v.), the cap.; 2264 elementary schools have 127,000 pupils; 37 secondary, 8000. Illiteracy reaches over 60 per cent. Other tns: San Pedro Sula, La Esperanza, Nacome, Santa Rosa de Copán, Choluteca, Comayagua. Ports: on the Atlantic coast, La Ceiba, Tela, Puerto Cortés, and Trujillo; on the Pacific coast, Amapala (qq.v.). The port of entry for the Bay is. is Roatán. The total pop. (census of 1950) was 1,500,000, including aboriginal tribes, 35,000 (chiefly Mosquito and other Indian tribes all speaking different languages). Sp.-speaking inhab. are chiefly *mestizos*, i.e. Indians with an admixture of Sp. blood. On the N. coast there is a considerable proportion of negroes, working for fruit-trading companies; some 3000 of these are Brit. subjects and their immigration is now forbidden.

By the completion in 1943 of the Inter-Amor. Highway, H. is connected with the highway system of Guatemala, El Salvador, and Nicaragua. An Inter-Ocean Highway, linking Tegucigalpa with both the Caribbean Sea and the Pacific Ocean, is under construction. There are only 3 railways and these are confined to the N. coastal region, where they are used mainly for the carriage of bananas. Tegucigalpa is not served by any railway and there are no international rail connections. The total railway mileage is 831. The road service (1238 m.), generally unsatisfactory, has been improved. This situation is made good by the air service. There are 8 gov. wireless stations and 10 broadcasting stations. See H. Jalhay, *La République de Honduras*, 1898; E. Martínez López, *Geografía de Honduras*, and *Historia de Honduras* (Tegucigalpa), 1919; A. B. Quilones, *Geografía e Historia de Honduras* (Choluteca), 1927; G. B. Reyna, *Honduras* (Tegucigalpa), 1930; C. M. Wilson, *Central America*, 1941; Preston E. James, *Latin America*, 1941; S. Turcios, *Conociendo la madre Patria*, 1942; V. W. von Hagen, *Jungle in the Clouds*, 1945.

Honduras, British, see **BELIZE** and **BRITISH HONDURAS**.

Honduras, Gulf or Bat of, broad basin skirting Honduras, Guatemala, and Brit. Honduras in the Caribbean Sea between 16° and 18° N.

Hone, William (1780–1842), bookseller and compiler, b. Bath. He set up in 1817 as a bookseller, and soon became notorious as a publisher of political lampoons, for the issue of one of which he was unsuccessfully prosecuted. He became yet better known when he issued sev. satires written by himself, with illustrations by George Cruikshank. The best of these are *The Political House that Jack built*, 1819, and *The Man in the Moon*, 1820. Perhaps he is to-day best remembered by his *Every Day Book*, 1826–7, his *Table Book*, 1827–8, and his *Year Book*, 1828, which are still obtainable in modern eds. See life by F. W. Hackwood, 1912.

Honegger, Arthur (1892–1955), Franco-Swiss composer, b. of Swiss parents at Le Havre; studied in Paris and Zürich, joined the group of young Fr. composers known as 'Les Six,' but later in his career also came under Ger. influences and developed greater affinities with the country of his origin, without losing those with Franco. His output is very large, including the dramatic Psalm *Le Roi David*, the stage oratorio *Jeanne d'Arc au bûcher* (Paul Claudel), and sev. similar works; 12 ballets; much incidental music for classical and modern Fr. plays; radio and film music; 5 symphonies, 3 *Mouvements symphoniques*, including *Pacific* 231 and *Kugby*, and many other orchestral works, some with solo instruments; 3 string quartets and other chamber music; piano works; numerous songs, etc. See studies by José Bruyr, 1947, Marcel Delannoy, 1953, and Willy Tappolet, 1954.

Honesty, or *Lunaria annua*, family Cruciferae, grown in Brit. gardens, is a native of Europe. It is a hardy biennial bearing racemes of lilac-coloured flowers which have no scent, and the fruit silvery septa, used for winter decoration.

Honey, thick syrup collected by bees and also by a few species of wasp and by honey- or pouched-ants. The bees suck nectar from flowers and empty it from their crops into the cells of their hives. H. is most plentiful where flowers luxuriate and when the weather is dry and warm. The ants vaunted the H. of Mt Hybla in Sicily, and the aromatic, highly-granulated H. of Narbonne is famous to this day. Virgin-H., gathered by young bees before they have swarmed, is finer than the H. of old hives. The colour varies with the source: heather-H. is a deep golden-yellow, and the H. from white clover a greenish-white. The Koran refers to H. as a liquor 'wherein is a medicine for men,' and in India and elsewhere its value as a gentle laxative has long been recognised. It was a favourite article of food among the anc. Greeks, and was an ingredient in such popular beverages as mead, the 'clarre' of Chaucer's day, and the Rom. 'mulsum.' Chemically, H. is composed of laevulose (36.45 per cent), dextrose (36.57), water, mineral matter,

pollen, and wax. On an average H. contains over 70 per cent of invert sugar (q.v.). Starch, water, glucose, and gypsum are common adulterations. In normal years, Hungary and Poland are among the chief H. producing countries; in favourable years Hungary can produce 9000 tons. It is also imported from California, New Zealand, and Australia. It is a minor colonial product. There are small bee-keeping industries at Mauritius, Cyprus, Palestine, Brit. Honduras, Brit. Gulana and various W. Indian colonies. The only colony with a substantial trade is Jamaica—averaging 800 tons annually. See BEE; BEEKEEPING.

Honey-buzzard, popular name of *Pernis ptilorhynchus*, a species of falconiform bird belonging to the family Buteoninae. It is occasionally found in England and is common in the wooded districts of W. Europe, from whence it migrates in winter to Africa. Its food consists of insects, small mammals, birds, etc., which it devours upon the ground; it derives its name from the habit it has of plundering the nests of bees and wasps for the sake of the honey. The plumage is variously coloured and is often indistinguishable from the dense foliage in which the H. prefers to nest.

Honey-dew, sweet and sticky exudation found, especially in warm, dry weather, on the leaves and stems of many trees and plants. Some hold that it is invariably associated with Aphides, Coccids, as, for instance, *Coccus mannifera*, and other insects, for it is known that Aphides excrete from the abdomen a fluid indistinguishable from H., the theory being that they prick a hole in the leaf or stalk and suck the excess of sugar from the flowing sap. Others believe that without these insects H. would still form whenever the tissues of the plant are broken. H., which is also called manna, has been known to fall in showers. As it closes the pores when it dries, and thus hinders the natural growth of a plant, gardeners use a syringe to wash it away.

Honey-eaters, name given to the species of Meliphagidae, a large family of passeriform birds found in the Australian region. They are small birds with beautifully coloured plumage, long curved beaks, and long tails; their habits are active and pugnacious, and they are constantly hopping from tree to tree in search of honey and insects, which constitute their food. The species of *Meliphaga* are among the most brilliantly plumaged of all birds, *M. auricomis* being one of the best known. *Anthornis*, the New Zealand bell-birds, and *Manorhina melanophrys*, the bell-bird of Australia, are remarkable for their clear, tinkling voice.

Honey Flower, see MELIANTHUS.

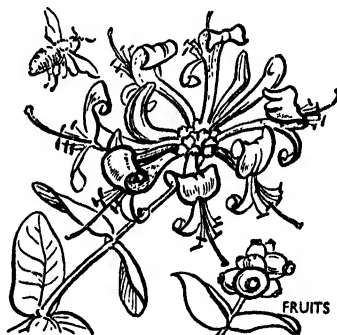
Honey-guide, name given to the species of *Indicator* and *Protodiscus*, 2 genera of ptiliform birds which constitute a family Indicatoridae. They were formerly placed among the cuckoos, but are more nearly related to the woodpeckers and barbets; most of the species are found in Africa, but *I. archipelagus* and *I. minor* inhabit the Malay Peninsula and Borneo. Their

name is derived from their curious habit of conducting travellers in the direction of bees' nests by means of a shrill cry or hiss, and they will flutter round until they are sure that they are being followed. *P. regulus* is a native of Natal, and *P. insignis* of E. Equatorial Africa.

Honey-locust Tree, or **Three-horned Acacia**, popular name of the leguminous plant *Gleditsia triacanthos*, a native of the Carolinas and Virginia. The trunk and branches of the young tree are covered with prickles, the foliage is of a light shining green, and the seeds are covered with a sweet pulp.

Honeycomb-moth, popular name given to members of *Galleria*, a genus of lepidopterous insects belonging to the family Pyralidae. Certain of the species infest beehives, where they deposit their eggs; the larvae feed on the comb, through which they make tunnels. There are 2 broods in the year, the first appearing in May and the second in full summer. *G. mellonella* is the largest and best-known species.

Honeysuckle, common name applied to the *Lonicera* (q.v.) genus. African H. is



HONEYSUCKLE

Halleria lucida, a South African evergreen shrub; bush H. is the genus *Dierilla* (q.v.); and Jamaica H., *Passiflora laurifolia*.

Honeysuckle Tree, see BANKSIA.

Honfleur, Fr. seaport in the dept of Calvados, on the S. bank of the Seine opposite Le Havre. It is a most picturesque town, and has a flamboyant Gothic church of the 15th cent. built entirely of wood; above the town is a sailors' pilgrimage shrine, Notre-Dame-de-Grâce. Colonists from H. founded Quebec. It is a railway terminus, has a brisk fishing trade and an export of dairy produce. Pop. 7900.

Hong Kong (from *Hiang-Kang*, Fragrant Harbour), is in the China Sea, separated from the coast of China by the Laimun or Lyemoun ('Carpfish') Pass, a strait less than half a m. in width. H. K. is a

Brit. colonial dependency and lies S. of Kwangtung Prov. and E. of the Pearl R. estuary. The colony includes the ters. of H. K. Is., which has an area of 32 sq. m., with a length of 11 m. and a breadth varying from 2 to 5 m.; the S. tip of the mainland peninsula of Kowloon, with area 3½ sq. m.; and Stonecutters Is., 1 m.; as well as the New Ters., which consist of an area of hinterland with many is. (area 355 sq. m.). The New Ters. stretch northwards to the Shum Chun R. and include the seabeds of Deep Bay to the W., and Mirs Bay to the E. The total area of the colony is thus about 390 sq. m., most of which is steep and unproductive hillside. H. K. Is. rises steeply from the N. shore to a range of treeless hills of volcanic rock, of which the highest point is Victoria Peak (1823 ft.). The scenery, especially along the deeply indented shores, is superb. Between the hills and the N. water-front lies the city of Victoria (q.v.). Most of the urb. area of the is. is flat unreclaimed land. The is.'s almost land-locked natural harbour varies in width from 1 to 3 m. and is entered from the E. by a deep-water channel through Laimun Pass, and protected from the W. by a cluster of is. through which a shallower channel gives access to coastal vessels. H. K. harbour has become the gateway to S. China, lying, as it does, half way between Haiphong and Shanghai. The Kowloon Peninsula, which is flat and has been extended in area by reclamation, has grown greatly as a residential suburb and, besides, contains the chief industrial area of the colony; on the W. shore are wharves for ocean going ships and at the S. end of the peninsula is the terminus of the Kowloon-Canton Railway. Between Kowloon and the New Ters. to the N. is the Unicorn range of hills. The New Ters. are steep and barren, the highest point being the peak Talmoshan (3130 ft), 7 m. NW. of Kowloon, NW. of which peak is the colony's largest area of cultivable land stretching to Deep Bay. The E. half of the New Ters. mainland, mountainous and unproductive, extends to the rocky and indented coastline of Mirs Bay. Where cultivation is possible vils. exist and crops are grown; intricate terracing brings as much land under cultivation as possible. Only a very few of the 75 adjacent is. included in the New Ters. show traces of the impact of W. civilisation, and many are uninhabited. The largest is. is Lantau, rugged and beautiful, lying W. of the harbour. It is more than twice the size of H. K. is. and its highest peak is 3000 ft. Wooded ravines and scrub-covered spurs, where may be found plenty of wild boar and barking deer, slope steeply upwards. The other is. are much smaller, the smallest inhabited is. being Ngai Ying Chau (8 ac.). The total estimated pop. of the New Ters. is 60,000.

Climate.—The climate of H. K. is sub-tropical and conditioned largely by the monsoons, the winters being cool and dry and the summers hot and humid. The climate is unfavourable to Europeans

owing to the rapid alternations of heat and cold, and the chief tn. retains the violent heat of the sun long after sunset, being hedged in by rocks which keep off the cool evening breezes; but for 6 months of the year the weather is cool and dry with long periods of sunshine daily. The summer is the rainy season, three-quarters of the ann. rainfall falling between May-Sept. Fog and very low cloud are common in Mar. and April when S. winds may temporarily displace the cool NE. monsoon, which sets in during Oct. and lasts till April. The SW. monsoon prevails from May to Aug. From June to Oct. H. K. may be affected by typhoons, but they are sometimes experienced before and after this period. A typhoon whose centre is over or near H. K. is accompanied by hurricanes, which may result in much damage and loss of life. The mean monthly temp. ranges from 59° F. in Feb. to 82° F. in July, the yearly average being 72° F. The temp. rarely rises above 95° F. or falls below 40° F.

Commerce and Industry.—The main primary product of H. K. is fish, deep-sea fishing being an important occupation. *Agriculture* is limited by reason of the rugged and mountainous terrain and *mineral resources* are believed not to be great. A new Dept. of Agriculture was set up very soon after the colony was re-taken in 1945, which did much not only to restore the farming industry to what it was before the war but also to establish it on a much sounder basis with a view to steady development on scientific lines. The prin. crops, grown almost entirely in the New Ters., are rice and vegetables, especially sweet potatoes. Pigs and poultry are the main food animals reared, but as stated above marine fish is the chief primary product, and the fishing fleet is the largest of any port in the colonial ters. Considerable progress has been made in the organisation of co-operative production and collective marketing. A small gov. experimental station which existed in the New Ters. before the war was restarted after the Brit. re-occupation. Before the war there was a Botanical and Forestry Dept. which took charge both of the Botanical Gardens and gov. grounds and of the afforestation of the hill-sides. There is now a Dept. of Agriculture, Fisheries, and Forestry. What little mining is done is entirely in the New Ters. Iron, lead, wolfram, and graphite are mined by underground methods, and kaolin, quartz, and feldspar by open-cast methods. Local industry includes shipbuilding, ship repairing, engineering, and a wide range of light industries, the main products of which are textiles, rubber goods, buttons, leather goods, cigarettes, matches, preserved ginger and confectionery, tinned goods, glassware, and paint. H. K.'s industrial production is almost entirely in Chinese hands, most of the factories being Chinese-owned and managed. The post-war years have been notable for a remarkable expansion in productive industry. In 1948 there were 1160

factories with a total labour force of some 60,000. By the end of 1956 there were 3319 factories and workshops employing 146,377 persons, and some half of the pop. were directly or indirectly dependent upon industry. Before the war more persons were employed in the textile industry than in any other single industry, there being 25,000 engaged in cotton weaving in 150 factories—making cheap shirts and prints for export to Malaya, Ceylon, and East and West Africa; and 15,000 in 450 knitting factories. The outbreak of war with Germany had a stimulating effect on the colony's industries, intensified in the 1950's by the restriction of the China trade resulting from the Communist revolution in China and the Korean war. Shipyards and iron foundries are among the colony's heavy industries, while light industries produce cotton yarn and piece goods, enamel and aluminium ware, varnishes, plastic ware, vacuum flasks, and rubber and leather footwear.

The chief tn of H. K. is Victoria, the seat of gov. and of trade, which stretches for 5 m. along the N. coast. It is built in 3 layers, the Praya or Esplanade, which is given up to shipping, the Chinese quarters being beyond the commercial portion; the second layer which contains gov. house and other public buildings; and the Peak, or third layer, which is reached by a cable tramway. The port facilities at Victoria are comparable with those of any first-class port in the world. Regular services are maintained by 17 shipping lines to the U.K. and Europe, 18 to North America, 8 to Australasia, as well as lines to African and South Amer. ports and innumerable lines to all parts of Asia. More than 20,000 native-type craft, known as junks, operate in H. K. waters, and there is still a useful trade along the Chinese coast, mainly in the import of foodstuffs. The total shipping entering and clearing the port in 1956 was 7870 ocean-going vessels of 21,807,590 tons, 2272 riv. steamers, 28,557 junks and launches. In 1956 foodstuffs, textiles, and raw cotton headed the list of imports (about H. K. \$4566 million), China, Japan, and the U.K. being the prin. sources of supply. Exports in 1956 were worth H. K. \$3210 million, the largest items being cotton piece-goods, yarns and manufs., enamel ware, electric torches, and footwear. The U.K. was the largest customer.

Government.—H. K. is administered by a governor assisted by an executive council and a legislative council. The executive council, which is consulted by the governor on all important administrative matters, includes the senior military officer, the colonial secretary, the attorney general, the secretary for Chinese affairs, the financial secretary (who are members *ex officio*), 1 other nominated official member, and 6 nominated unofficial members, 3 being Chinese and 1 Portuguese. The legislative council consists of not more than 9 official members, including the same 5 *ex officio* members

listed above, and not more than 8 unofficial members. At the end of 1956 there were 9 official members and 8 unofficial members, including 4 Chinese and 1 Portuguese. The procedure of this council, with the advice and consent of which all legislation is enacted and by which all expenditure from public funds has to be approved, is based on that of the Brit. House of Commons. There are 3 standing committees of the legislative council—the finance committee, the law committee, and the public works committee—and select committees are from time to time set up to advise on matters before the council. In 1947 the secretary of state for the colonies approved proposals for a revision of the constitution, providing for the estab. of an urb. council (to which many of the functions of the present gov. would be delegated); this consists of 5 *ex officio* members and 16 ordinary members of whom 8 are elected and 8 appointed by the gov. At the resumption of civil gov. in 1946 the normal *judicial system* of H. K. was restored. The Supreme Court of H. K. has the same jurisdiction as the Eng. Courts of Queen's Bench, Common Pleas, and Exchequer have or had in England, and is a Court of Oyer and Terminer and Gaol Delivery, Assize and Nisi Prius, with jurisdiction in Probate, Divorce, Admiralty, Bankruptcy, and criminal matters; and it is also a Court of Equity with the same jurisdiction as the Court of Chancery has or had in England.

Education.—H. K. has a voluntary system; in 1956, of some 300,000 pupils enrolled, 172,000 were at private schools, 81,000 at grant-aided and subsidised schools, and 25,000 at gov. schools. The present system may be said to have started in 1913 when the Education Ordinance, from which the director of education derives his legal powers, came into operation. The medium of instruction in schools varies from one category of school to another. In some, Eng. is the sole language; in others, Chinese; and a number of schools have classes in both languages. The grant-aided schools mainly use Eng. Normally secondary education in Eng. is to a great extent in the hands of gov. and grant-aided schools. Of 1200 schools in H. K. in 1956, 788 were private, 346 were subsidised, 20 were grant-aided, and 46 were gov. schools. Education in H. K. is not free although 10 per cent of the pupils in gov. schools are awarded free places. The univ. was incorporated in 1911 and opened formally in 1912. In 1941 a new science building was opened. The supreme governing body of the univ. is the Court, with life, *ex officio*, and nominated members, the governor as chairman and a council or executive committee, and a senate composed of the vice-chancellor, the director of education, and the profs. and readers. There are 5 faculties, medical, engineering, arts, science, and architecture; and the total number of students in Oct. 1956 was 886, including graduate students. The buildings of the univ. received grievous

damage when H. K. fell to the Japanese in the Second World War.

Matters of public health are the responsibility of the Medical Dept, the functions of which are separated into different divs., e.g. hospitals, health, investigation, and relief. The immense overcrowding of the colony that followed the Second World War forced a great strain on both health and housing services, but the public health remained good.

Communications.—An electric tramway with 19 m. of track and new motoring roads were opened before the war. Some 450 m. of roads are maintained, 185 m. of which are on the is. of H. K., 122 on Kowloon, and the remainder in the New Ters. About 90 per cent of these roads are of modern metalled construction. The road system suffered considerably from neglect during the Jap. occupation. Two new roads, both in the New Ters., were built during the Jap. occupation: one to the top of Talmoshan built to serve as a Jap. early warning radar station, whilst the other, leading to Saikung vi., was designed to facilitate Jap. military operations against the Chinese guerillas. Kowloon is the S. terminal of the railway system extending to Hankow. From Lo Wu on the border of the New Ters. N. to Canton the route is now operated by the Canton-Hankow Railway; from Lo Wu S. to Kowloon (a distance representing 36 km. out of a total of 183 km. from Kowloon to Canton) the railway is operated by the H. K. Gov. Through services formerly operated to Canton and the N. were discontinued with the formation of the Central People's Gov. in China. H. K. is a most important link in the net-work of post-war aviation; there is an international airport at Kai Tak served by 15 air lines. Work is well advanced (1957) on the construction of a new airport to take the jet aircraft that will enter world air routes by 1958. The present airfield is to the NE. of Kowloon, a 15-min. drive from Kowloon's chief hotel. Situated under a steep range of hills rising at one point to 1800 ft. it is an airfield which by modern standards leaves much to be desired. The Japanese, during their occupation, carried out a considerable extension of this aerodrome, doubling its size at the expense of adjacent Chinese houses and fields and of the former civil airport buildings; but despite these improvements the aerodrome remained inadequate for heavy aircraft.

History.—Prior to 1841 the is. now known as H. K. was inhabited by a few fishermen, stone-cutters, and farmers, and provided a notorious hiding-place for smugglers and pirates. In that year it was occupied by Brit. forces partly as a reprisal for the treatment of Brit. merchants in Canton, and partly to provide a secure base for trading with S. China merchants. The cession of the is. to the Brit. Crown was confirmed by the treaty of Nanking in Aug. 1842. The convention of Peking in 1860 added the Kowloon Peninsula and Stonecutters Is. to the

Crown Colony and under a later convention of Peking, concluded in 1898, the area known as the New Ters., including Mirs Bay and Deep Bay, was leased to Great Britain for 99 years. Nearly a century of unbroken peaceful development followed the treaty of Nanking. One of the world's greatest harbours grew up naturally in the colony's enclosed waters; the freedom of the port and the freedom of entrance and departure for all persons of Chinese race were preserved in accordance with a policy which ensured for the colony the rôle of entrepôt both for the trade and for the labour of China's S. provs.; afforestation, extensive reclamation of foreshore, cultivation of the lower slopes, and a net-work of motor roads cut into the hills combined with the steady and natural growth of Victoria itself to present to the ocean-going ships which lay in the harbour in 1941 a picture very different from that which met the first merchantmen who watered off the SW. coast of the is. or the first pioneers who had explored the hostile hills in quest of pirates a century earlier. The colony became known as an impartial refuge during the internecine strife which ensued in China after the inauguration of the Chinese Rep. in 1911 and, later, when China was attacked by Japan.

When Japan suddenly entered the Second World War at the end of 1941 on the side of her Axis (q.v.) associates, her forces at once bombed H. K. The defences of the is. and of Kowloon had been much strengthened and these, supplemented by the mountainous nature of the colony, were apparently believed to

huge odds. By mid-Dec. 1941 Kowloon was in Jap. hands and the garrison of that peninsula prepared to withdraw into H. K. Is. On 17 Dec. Sir Mark Young, governor of H. K., rejected a Jap. proposal to enter into negotiations for surrender and refused to accept any further communications from the Jap. commanders. The next day the Japanese made landings in considerable force. Later in the day after stiff fighting they gained possession of Victoria City and most of the is. By now the enemy had more than 20,000 men on the is. alone and were using their undisputed command of the air to full advantage. The gallantry of the garrison was beyond praise. Eventually (25 Dec.) shortage of water compelled the defenders to ask for terms. Thus ended, temporarily, the 100 years of Brit. rule of the colony of H. K.

The colony remained in Jap. hands for some 3½ years. The pop. quickly fell from 1½ million to less than half that number. In the face of increasing oppression and brutality the fundamental loyalty to the Allied cause of the Chinese who remained was never in doubt; parts of the New Ters. remained in the hands of Chinese guerillas throughout the war, in spite of the most vigorous punitive measures which the Japanese could

invoke; passive resistance to every Jap. enterprise was adroitly calculated; Allied subversive organisations had no difficulty in securing the help of every class of Chinese resident in the colony. H. K. was eventually liberated by units of the Brit. Pacific Fleet on 30 Aug. 1945. The Jap. forces were taken prisoner and a military administration was set up under Rear-Adm. Harcourt as commander-in-chief. The military administration lasted until 1 May 1946, considerable headway having been made in the previous 8 months with the work of reconstruction, a

immigrants came to consist more entirely of refugees; the total increase in pop. between 1945-56 has been estimated at 2,000,000, and since 1950 a quota system of immigration has been imposed. An attempt to relax it in 1956 proved abortive. The immigration problem has dominated post-war H. K. The vast increase in pop. in an area considered overcrowded in 1941 has led to considerable social and economic problems. In the last few years ambitious gov.-sponsored housing schemes have begun to have a real effect in dealing with the



Canadian Pacific

SHOPS IN A HONG KONG STREET

result largely due to the cheerfulness and resilience of the Chinese pop. Civil gov. was restored on the above date when Sir Mark Young resumed the governorship of the colony and the legislative and executive councils were reconstituted. In June 1946 the gov. (as in other colonies) set up a committee to consider the relative merits of various schemes for the development and welfare of the colony under the provisions of the Colonial Development and Welfare Act, 1945. War crimes tribunals during 1946 were set up in H. K. by royal warrant; the Jap. treatment of Brit. prisoners in H. K. had been notoriously cruel.

After the Second World War H. K.'s efforts to recover her pre-war economic position in Asia were complicated by political events in China itself. From 1945 the pop. began increasing rapidly, many of the immigrants being at first people who had left H. K. during the Jap. occupation. But as the Civil war in China became more violent so the

serious slum problem which was already in existence before 1941, and which was accentuated greatly by the influx of refugees after 1945. Industry has undergone great expansion and has absorbed much of the immigrant labour with surprisingly little difficulty. H. K.'s relations with the Chinese People's Rep. have been characterised, generally speaking, by a cold correctness on both sides. H. K. has undoubtedly suffered economically from the trading ban existing between the U.S.A. and Communist China, which has affected her total economic mercantile traffic.

Pop. (estimated, 1956) about 2,535,000, the great majority being of Chinese race. There were in the colony, excluding Services personnel, about 14,000 Brit. subjects from the U.K. and the Dominions, 1870 Americans, 1770 Portuguese citizens, and sev. other exotic communities. Many dialects of Chinese are spoken but Cantonese is the *lingua franca*. See G. R. Sayer, *Hong Kong*:

Birth, Adolescence and Coming of Age, 1937; Winifred A. Wood, *A Brief History of Hong Kong*, 1940; also ann. departmental reports, Blue Books, Gazettes, etc.

G. Benthall, *Flora Hongkongensis: a description of the flowering plants and ferns of the island of Hong Kong*, 1801; S. B. J. Skerthby, *Our island: a naturalist's description of Hong Kong*, 1893; J. C. Kershaw, *Butterflies of Hong Kong and South-East China*, 1905; S. T. Dunn and W. J. Tutcher, *Flora of Kwangtung and Hong Kong* (H.M.S.O.), 1912; T. F. Claxton, *Climate of Hong Kong, 1884-1929*, 1931; G. A. C. Herklots, *Flowering Shrubs and Trees*, 1938, *Orchids*, 1937, and *The Birds of Hong Kong*, 1946; S. G. Davis, *Hong Kong in its Geographical Setting*, 1949; M. Greenburg, *British Trade and the Opening of China, 1800-1842*, 1951; H. Ingrams, *Hong Kong*, 1952.

Hon-gay, coal-mining tn in the prov. of Quang-yen (q.v.), Tonking. There is a large open-cast coal mine, and also docks accessible to large ships, at which coal is loaded. Tin and antimony are mined in the neighbourhood.

Honiton, mkt tn of Devon, England, on the Otter, 16½ m. ENE. of Exeter by rail. It is famous for its lace-making, an industry introduced by the Flem. in the reign of Elizabeth I. Pop. 5058.

Honnelt, Ger. spa in the *Land* of North Rhine-Westphalia (q.v.), lying between the Rhine and the Siebengebirge (qq.v.), 8 m. SE. of Bonn. Pop. 9000.

Honolulu, city, port, and co. of Hawaii, Pacific Ocean (belonging to U.S.A.), situated on the S. coast of the is. of Oahu. It is the cap. of Hawaii. In 1907 an Act was passed by which the is. and co. of Oahu and the small is. adjacent became the 'city and co. of H.' The chief industries are sugar refining, pineapple canning, ironworks; chief exports: sugar, fruits, and coffee. The city has a plentiful water supply, and hence the vegetation is luxuriant. There is a natural harbour which is formed by a lagoon within the coral reef; it has 22 ft. of water at the entrance at high tides, and can hold a large number of ships. This and Pearl Harbor (q.v.) are the only safe ports in the archipelago. Extensive naval and military works have been constructed at H.

From 1820 to 1893 the city was the residence of the sovereign, and is now the seat of gov. and the foreign consuls. It is an entrepôt for European and Indian goods, and has communication by air and steamship with San Francisco, Seattle, Vancouver, Victoria, Sydney, and Chinese and Jap. ports. The univ. of Hawaii is situated at H., as is Bishop Museum, Academy of Arts, and Punahou Academy. The city has electric trams. Pop. of city and co. 347,529. See HAWAII.

Honorius, Rom. emperor of the W. (AD 395-423), b. Ravenna, 2nd son of Theodosius the Great. The prin. events of his reign were the execution of Stilicho (408), which left H. powerless against the Gothic invaders, and the sack of Rome by Alaric (410).

Honorius, the name of 4 popes:—

Honorius I (625-37), succeeded Boniface V. He wrote a letter to Edwin, king of Northumbria, urging him to be true to the Rom. faith, and at his request conferred the pallium on the bishops of York and Canterbury. The Celtic Church was a source of continual anxiety to him, as it failed first of all to acknowledge his supremacy, and secondly continued to observe Easter according to a rule for fixing the time that Rome had discarded, and in its own way. H. also corresponded with Sergius, patriarch of Constantinople, who supported the emperor Cyrus's attempt to impose a comprehensive formula of faith acceptable to the Monothelite heretics (see MONOTHELITISM). H. in 2 letters sent to Sergius did not define the faith of the Rom. Church on this point but confined himself to supporting Sergius's attitude. At a General Council at Constantinople in 681 Sergius and H. were both anathematised, and the formula presented by the reigning pope, St Agatho, was accepted. For the bearing of this on the doctrine of papal infallibility (q.v.), see J. Chapman, *The Condemnation of Pope Honorius I*, 1907.

Honorius II (1124-30) was Cardinal Lambert Scannabecchi, bishop of Ostia, before his election to the papal chair. Besieged by Roger, count of Sicily, in Benevento, H. afterwards countenanced his investiture as duke of Apulia and Calabria. He excommunicated Conrad, Lothair's rival for the throne of Italy.

Honorius III (1216-27), was Cardinal Cencio Savelli before he succeeded Innocent III. A zealous supporter of the mendicant orders, he failed to induce Frederick II to lead a crusade against the Muslims, and was so unpopular at Rome that he was repeatedly driven beyond that city's gates. See monograph by J. Clausen, 1895, and A. Keutner, *Papsttum und Krieg unter Honorius III*, 1935.

Honorius IV (1285-7), was Cardinal Giacomo Savelli. He favoured the claim of the house of Anjou to the Sicilian crown and inflicted eccles. penalties on their Aragonese opponents. See M. Prou (ed.), *Les Régistres d'Honorius IV*, 1889.

Honour, legal description of a seigniorship of 2 or more manors under the control of 1 baron and subject to a single jurisdiction. See MANOR.

Honour, Maids of, see HOUSEHOLD, ROYAL.

Honourable (from Fr. *honorable*, and Lat. *honorabilis*, deserving honour), title of honour prevalent in the U.K. and her colonies and also in the U.S.A. In the U.K. marquesses should be addressed as 'most H.'; earls, viscounts, barons, and privy councillors as 'right H.'; whilst the title of H. is reserved for maids of honour, judges of the high court, and the sons and daughters of peers. Formerly the style was loosely applied. Maj.-gen. Lowther, whose father was a merchant, is described on his tomb in Westminster Abbey as 'The Hon.' (1746). In America and the colonies judges and members of state

legislatures or the executive councils have a right to the distinction.

Honourable Artillery Company (H.A.C.). As a military force this is one of the most ancient in the world, having been granted its charter by Henry VIII in 1537. At this time 'artillery' included every kind of missile, and this company was a Guild of Archers and Handgunmen. This Guild became a training school for the London Train Bands, and was always in the forefront of military training units. Many famous people have served in its ranks at various periods, including the poet Milton, Marlborough, Wren, and the great Fr. engineer Vauban. Contingents from the H.A.C. served in the South African war, 1899-1902, and during the First World War it raised 3 infantry battalions and 7 batteries of artillery, which served in France, Flanders, Italy, Palestine, and Aden. The H.Q. of the H.A.C. are at Artillery House, Finsbury, London. An Amer. off-shoot of this Company is the present 'Ancient and Honourable Artillery Company of Boston, Massachusetts,' founded in 1638 by 4 members of the H.A.C. who emigrated. In the Second World War the 12th (H.A.C.) Regiment, Royal Horse Artillery, took part in many battles on the It. front, 1944-5. See Maj. G. Gould Walker, *The Honourable Artillery Company 1537-1947*, 1954.

Honshu, see under JAPAN.

Honthelm, Johann Nikolaus von (1701-1790), Ger. historian and theologian, educ. by the Jesuits. From 1732 to 1779 he was dean of St Simeon's in Trier (q.v.), his native place, and from 1738 to 1747 represented the interests of the archbishop-electoral at Koblenz. From 1748 he was suffragan bishop of Trier and he was also pro-chancellor of the univ. Under the pen-name of 'Febronius' he discussed the limits of papal authority in what became a famous treatise. His 3 hist. of Trier are in the highest degree erudite.

Honthorst, Gerard van (1590-1656), Dutch painter, has left many pictures which are now to be found in the galleries of Europe. B. in Utrecht, he studied under Abraham Bloemaert, migrated to Rome, where he executed his masterpiece 'Christ before Caiaphas.' In Whitehall, as in the Palace of The Hague, etc., he painted allegorical subjects, and there are still in existence many excellent portraits from his hand, e.g. the Countess of Bedford in Woburn Abbey. He is noted specially for his candle-light studies in the style of Caravaggio (q.v.).

Honvéd (Land-defenders), term first used under the early monarchy of Hungary to describe the national champions. During the revolution of 1848 it was used of the patriotic party, and after independence was estab. (1868) was applied to the Landwehr. In 1918 it was applied to the whole army.

Hooch, Pieter de (1632-81, or later), Dutch painter, b. near Rotterdam, worked at Delft, where he was influenced by Fabritius and Vermeer. Like Hobbema and Cuyp, he was held in small esteem by his contemporaries. He left a few

beautiful courtyard scenes and Dutch interiors which intimate an earnest appreciation of domestic life and a warm love for sun and light. Some of his best pictures are in the National Gallery. In later life his art declined. See Von Hofstede de Groot, *Catalogue raisonné*, 1907; E. Fromentin, *Masters of Past Time* (trans.), 1910.

Hood, Sir Alexander, see BRIDPORT. VISCOUNT.

Hood, Sir Horace Lambert Alexander (1870-1916), rear-admiral; b. London, 3rd son of 4th Viscount H. Cadet at age of 12. Lieutenant, 1890; in the *Trafalgar*, 1891-2. Until 1895 studied gunnery ashore and performed staff duties. His first experience of war was under Egyptian Gov. in gunboat on Nile, 1897. At Athara and Omdurman. Commander, 1898. Captain, 1903. Shore-fight, Somaliland, 1904. Commanded college, Osborne, 1910-13. Rear-admiral, 1913. In command of Dover patrol that secured Eng. Channel on outbreak of the First World War. While ably assisting Jellicoe with a battle-cruiser squadron in Jutland battle he perished in the wreck of his flagship the *Invincible*, whose magazine was exploded by a Ger. salvo, 31 May 1916. See J. S. Corbett, *History of the Great War, Naval Operations*, 1923.

Hood, John Bell (1831-79), Amer. soldier, graduated from the military academy at West Point in 1853. On the declaration of Civil war he joined the Confederates, and after the battle of Gaines's Mill (1861) was promoted to major-general. At Gettysburg (1862) he was wounded and after the battle of Chickamauga (1863) lost one of his legs by amputation. Disaster attended him on winning the temporary command of the Tennessee army, and at the Battle of Nashville his forces were utterly overwhelmed (1865). See R. O'Connor, *Hood, Cavalier General*, 1949; J. P. Dyer, *The Gallant Hood*, 1950.

Hood, Robin, see ROBIN HOOD.

Hood, Samuel, Viscount Hood of Whitely (1724-1816), Brit. admiral, son of a clergyman and brother of Alexander H., 1st Viscount Bridport (q.v.), entered the navy in 1741. From 1780 to 1783 he was fighting in the West Indies, at first under Rodney, but afterwards as commander-in-chief. In 1781 he made an unsuccessful attempt to prevent the Fr. admiral, De Grasse, from blockading Chesapeake Bay, and the following year failed likewise, in spite of adroit manoeuvres, to dislodge the Fr., again under De Grasse, from the is. of St Christopher. Finally, he assisted at the discomfiture of his old enemy in the action off Dominica (1783). In 1784 he was returned to Parliament. During the Napoleonic wars he captured Corsica (1794). He was created viscount in 1796 and made governor of Greenwich Hospital. See J. H. Rose, *Lord Hood and the Defence of Toulon*, 1922.

Hood, Sir Samuel (1762-1814), Eng. vice-admiral, joined the navy in 1778, and from that year till his death was on active service almost without remission. He

took part in the action off Ushant (1778). For the next 2 years he was fighting in the West Indies, and in 1791 effected a brave rescue of some shipwrecked sailors outside the harbour of Jamaica. As commander of the *Zealous* he distinguished himself for his intrepidity and promptitude at the battle of the Nile (1797). In 1802, being promoted to commodore, he almost drove the Fr. out of the West Indies, and in 1805 seized 4 Fr. frigates near Rochefort, but his action unfortunately cost him an arm. Commander of the *Centaure* in 1808, he was publicly decorated by the king of Sweden for his brilliant seizure of the Russian gun-ship *Sewolod*. Useful reforms followed his promotion to commander-in-chief of the East Indies (1812).



SAMUEL, FIRST VISCOUNT HOOD

Hood, Thomas (1799-1845), poet, b. London of Scottish descent. He began his literary life by contributing to the *London Magazine* at the age of 22, and through this connection he made acquaintance with De Quincey, Lamb, Hazlitt, and other leading writers of the day. He pub. *Whims and Oddities*, 1826, and began to publish his *Comic Annual* 4 years later. He was abroad from 1835 but returned to England in 1840, and in the following year took up the editorship of Colburn's *New Monthly Magazine*. In the year before his death he started *Hood's Magazine*, and issued *Whimsicalities*. His works were collected by his son and daughter, 1882-4. H. is best known as a humorist, and as such he occupies a very high place in Eng. letters. He was unduly addicted to the use of the pun, but he had a happy way of playing upon words that redeems his jokes from the charge of silliness. Though primarily a humorist, he could write in other veins. *The Dream of Eugene Aram*, 1839, is one of his most famous poems, second only to

the pathetic and beautiful 'Bridge of Sighs.' The 'Song of the Shirt,' pub. anonymously in *Punch* in 1843, attracted as much attention to the lot of the worker as *Oliver Twist* did to the abuses of the workhouse system. The *Memorials of Thomas Hood*, by his daughter, appeared in 1860, and biographies by W. Jerrold in 1907 and W. H. Hudson in 1915. See also W. Jerrold, *Thomas Hood and Charles Lamb, the story of a friendship*, 1930.



THOMAS HOOD

Hood, Mount, extinct volcano, 11,245 ft high, belonging to the Cascade Range, is 45 m. ESE. of Portland, Oregon, U.S.A. Pines and fir cover its lower slopes. On one side is a sheer descent of 7000 ft. Its summit is glaciated.

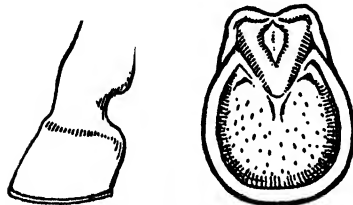
Hood, part of academic dress. It is a development of the monk's cowl, and indicates by its colour, material, and shape the faculty in which the owner has graduated, the status to which he has attained, and the Univ. to which he belongs. Some learned societies and colleges (mostly theological) grant academic H.s.

'Hood,' The, Brit. battle-cruiser and till the Second World War the show ship of the R.N. She carried a heavier armament than any other ship in the fleet with the same speed. Begun in 1916, launched in 1918, and completed in Mar. 1920. Her displacement was 42,100 tons and her speed was over 30 knots. The original cost was about £6,025,000 but a further £687,674 was spent on repairs and reconstruction when she was taken out of commission in 1929. She was again refitted in 1939. Her outstanding features were the huge area covered by heavy armour, strong framing, and the general scheme of protection. Her 8 15-in. guns fired a shell of nearly 2000 lb., their extreme range being 17 m. In addition there were 12 5.5-in. guns, as well as lighter armament. The ship was sunk off Greenland by a shell from the Ger. battleship *Bismarck* (q.v.) at 13 m. range, the shell penetrating

a magazine so that she blew up and sank in a few min. (24 May 1941). Of her complement of over 1300 only 3 were saved. See also 'BISMARCK,' THE; and NAVAL OPERATIONS IN SECOND WORLD WAR.

Hood of Avalon, Arthur William Aoland, Baron (1824-1901), Eng. admiral, entered the navy in 1836. During the Crimean war he was with the naval brigade before Sevastopol, and in the China war participated in the action of Fatshan Creek (1857) and in the seizure of Canton (1858). Director of Naval Ordnance (1869-73), he finally rose to the rank of First Sea Lord of the Admiralty (1885), when his conservatism proved a formidable obstacle to urgent reforms.

Hoods are horny boxes which protect the sensitive parts of the foot of an animal. The possession of H. is a distinction on which the large order Ungulata is based.



HOOF

They are equivalent to the claws and nails of other mammals, and are renewed from the superior to the inferior border like the human nail. The flexibility of the H. is promoted by a fluid secreted by the keratogenous (horn-producing) membrane. The so-called cloven H. has been evolved for walking and climbing on irregular surfaces by the formation of separate digits on the foot, each bearing its own distinct H. The horse's H. is too brittle for road wear, and the art of shoeing was practised as early as 333 BC. See CATTLE; HORSE.

Hooff, Pieter Corneliszoon (1581-1647), Dutch poet, dramatist, and historian, b. Amsterdam. His father was for some time burgomaster of Amsterdam. H. spent over 3 years travelling in Italy and Germany, and after studying law and hist. at Leyden Univ. (1606-9), received a highly remunerative appointment from the prince of Orange. He began by writing lyrical verse of great depth and beauty. The breadth of his European culture is manifest in his fine pastoral play *Granida*, 1605, his tragedy *Geeraert van Velsen*, 1612, his very successful and witty comedy *Warenaar*, 1616, and his monumental *Nederlandsche Historien 1555-56*, 1642-54. H. is one of the greatest of Dutch Renaissance poets, and one of the chief prose writers of the 17th cent. See G. Brandt, *Leven van P. C. Hooff*, 1677; P. Prinsen, *P. C. Hooff*, 1922; H. W. van Tricht, *P. C. Hooff* (2 vols.), 1950-1.

Hooge, tn just E. of Ypres in Flanders, Belgium. Its situation caused it to be involved in most of the operations around Ypres in the First World War. In May 1915 heavy Ger. attacks were launched against the E. and NE. fronts of the Ypres Salient, and by the 9th the Brit. line had been pushed back to H. on the E. Later in the month the Germans secured a footing in it. During the Ger. offensive of April 1918 H. was again the scene of much fighting, but the Ger. main effort was against the S. portion of Ypres more than the E. See also FRANCE and FLANDERS, FIRST WORLD WAR CAMPAIGNS IN.

Hoogezaand, tn in the Netherlands, 18 m. ESE. of Groningen. Up to 1650 the dist. in which this tn is situated was a waste, but by incessant toil it has been transformed into fertile fields. Pop. 22,000.

Hoogly, or **Hooghly**, see HUGLI.

Hoogstraten, Samuel D. van (1627-78), Dutch painter, b. Dordrecht, studied in the school of Rembrandt. He painted portraits and landscapes and also produced etchings. Good examples of his rare works are in Amsterdam and Vienna.

Hook, James Clarke (1819-1907), painter, b. London, studied at the Royal Academy, and in 1846 set out on his foreign tour with an Academy travelling studentship. After his return from Italy and Paris he abandoned his previous historical subjects, like 'The Finding of the Body of Harold,' 1845, and embarked on his splendid series of Eng. sea and land scenes, among them being: 'A Rest by the Wayside,' 1854, 'Luft Boy,' 1859, which Ruskin so much admired, and 'Sea Urchins.' See A. J. Hook, *Life of J. C. Hook, R.A.*, 1932.

Hook, Theodore Edward (1788-1841), dramatist and novelist, b. London, son of James H. a composer who wrote the music for *The Lass of Richmond Hill*. He was educ. at Harrow and Oxford. As a boy he wrote words for his father's music. In 1805 he composed a comic opera, *The Soldier's Return*, which was followed by *Catch Him Who Can*, 1806; both were highly successful, and they were followed by many others. H. was noted for his witty conversation and practical jokes, which earned him the friendship of the Prince Regent, who in 1812 had him appointed accountant-general of Mauritius; after he had held this post for 5 years serious irregularities were discovered, and he was sent home in disgrace, prosecuted by the gov. for a claim of £12,000, and imprisoned. It subsequently appeared that the actual peculation had been the work of a subordinate, and that H. himself was only chargeable with gross neglect of duty, but though he was released the claim against him was not withdrawn. He then became editor of *John Bull*, a jour. of high Tory and aristocratic proclivities, which he conducted with ability; he also ed. the *New Monthly Magazine*, and pub. a great amount of fiction, including *Sayings and Doings*, 9 vols., 1824-8, *Maxwell*, 1830, *Gilbert*

Gurney, 1836, and *Jack Brag*, 1837. Though making a large income he was always in money difficulties and after a long struggle with broken health and spirits he d. at Fulham. See R. H. Barham, *The Life and Remains of Theodore Hook*, 1849; M. F. Brightfield, *Theodore Hook and his Novels*, 1928; and A. Repplier, *The Laugh that Failed*, 1936.

Hook of Holland (**Hoek van Holland**), vil. in the prov. of South Holland, Netherlands. It stands at the mouth of the Nieuwe Waterweg, which leads from the North Sea to Rotterdam, and is an important port for passengers and mail steamers from England.

Hookah (from Arabic *hugga*), or **Nargileh**, water tobacco-pipe popular in India, Persia, Turkey, and other countries of the E. The tobacco bowl is connected by a wooden tube with a water vessel so that the smoke is cooled in the liquid before passing through a tube up to the smoker's mouth.

Hooke, Robert (1635-1703), horologist and physicist, b. Freshwater, Isle of Wight. On the death of his father, who left him the sum of £100, H. went to London to be apprenticed to a portrait painter, but with his money still intact he left the painter and went first to Westminster School and later to Oxford. While at Oxford he was a member of a group known as the Experimental Philosophical Club, of which Christopher Wren, then 23 years old, was also a member. It was during H.'s residence there that he discovered the particular suitability of the balance spring for rendering vibrations of the balance isochronous. This invention was the foundation of all the varied improvements resulting in the almost perfect compensation balance of the present day. Balance springs were immediately applied to watches made by Tompion (q.v.) and other eminent makers. H. is also credited with the invention of the anchor escapement, about 1655, and the duplex escapement (see **Clock**; **Watch**).

The range of his invention was phenomenal. Among his contrivances were a double-barrelled air-pump, the spirit-level, anerometer, marine barometer, and a sea-gauge. He was one of the earliest workers with the microscope: his *Micrographia*, 1667, contained the first description of plant cells, as well as many other accounts of microscopical anatomy. H.'s law in physics is named after him, and states that in elastic cords, spiral springs, etc., the elongation is proportional to the force producing it.

Together with others, including Wren, H. submitted plans for the rebuilding of London after the Great Fire; although they were not accepted, he was appointed one of the City surveyors.

Hooker, Sir Joseph Dalton (1817-1911), botanist; b. Halesworth, Suffolk, son of Prof. Sir W. J. Hooker; took his M.D. degree at Glasgow (1839), and as assistant surgeon accompanied Sir James Ross to the Antarctic in the *Erebus*. His foreign tours were all fruitful in scientific and

especially botanical discoveries, which were fully described in his *Flora Antarctica*, 1844-7, *Flora of British India*, 1874, etc. In 1865 he succeeded his father, also an eminent botanist, as director of Kew Gardens. A friend of Darwin, he championed his theories in his presidential address to the Brit. Association, 1868. President of the Royal Society, 1872-7. Other pubs. were a *Himalayan Journal*, 1854, and *General Plantarium*, 1862-83. Awarded O.M. in 1907. See monographs by L. Huxley, 1918, and F. Hower, 1919.

Hooker, Richard (1554-1600), Eng. theologian, was, through the patronage of 2 bishops, able to take his M.A. degree at Corpus Christi, Oxford, in 1577. For some time he was tutor to George Crammer, grand-nephew of the archbishop, and Edwin Sandys, son of the bishop of London, and later became master of the Temple, whence his more popular rival, Travers, the Puritan, was eventually expelled. The 8 books of the *Laws of Ecclesiastical Polity* were composed within the quiet of a country vicarage. Five books only were pub. in his lifetime, and considerable mystery attended the pub. of the last 3 during the half century following his death. The standard ed. is that of Koble, 1836, to which the inimitable life by I. Walton, 1666, is fitly appended. His theory, which he gradually unfolds from book to book, is based first on the unity and omnipotence of law, 'whose seat is the bosom of God,' and secondly on the supremacy of calm and temperate reason, to which all things, even divine revelation, are finally referred. The *Ecclesiastical Polity* is pub. in Everyman's Library (2 vols.). See V. Stanley, *Richard Hooker*, 1907; and L. S. Thornton, *R. Hooker, a Study of his Theology*, 1924.

Hooker, Thomas (c. 1586-1647), Amer. divine, b. Marfield, Leics., England. Preached in London and Chelmsford (1629); at the latter in Laud, bishop of London, dismissed him for nonconformity. He went to Holland (1630) and in 1633 emigrated with John Cotton and Samuel Stone to Boston, U.S.A.; appointed pastor at Newtown (now Cambridge, Massachusetts); and in 1636 he founded Hartford, which he named after the bp. of his assistant, Samuel Stone. Some of his works are: *A Survey of the Sum of Church Discipline*, 1648, *The Soul's Implantation*, 1637, *The Application of Redemption*, 1656. See life in C. Mather, *Magnalia Christi Americana*, 1702; and M. Tyler, *A History of American Literature*, vol. 1, 1878.

Hooker, Sir William Jackson (1785-1865), Eng. botanist and systemist, pub. his *Tour in Iceland*, 1811. It was written from memory, as all his notes and drawings were accidentally burned on his way home. Other of his scientific works were *British Jungermanniæ*, 1816, *Musci Escotici*, 1818, *Flora Scotica*, 1821, *Genera Filicum*, 1838-40, *Species Filicum*, 1846-64, and *Synopsis Filicum*, 1868. From 1820 he held the chair of botany in Glasgow Univ., and from 1841 till his death was director

of Kew Gardens. He collected an invaluable herbarium, and ed. 3 botanical journals. Besides numerous treatises on botany. See life by his son, Sir J. D. Hooker, 1903.

Hooker, Mount: 1. Peak of the Rocky Mts. between Brit. Columbia and Alberta, Canada, SE. of Mt. Brown, about 52° 27' N. Its altitude is computed at 10,782 ft.

2. Another Rocky Mt. peak, in the Wind River Range of Wyoming, U.S.A., with an altitude of 12,900 ft.

Hookworm, see ANKYLOSTOMIASIS.

Hoole, John (1727-1803), poet and translator, b. London. He was a friend of Dr Johnson, and for 40 years was a clerk in the East India House. He is chiefly remembered as the translator of Tasso's *Gerusalemme Liberata*, Ariosto's *Orlando Furioso*, and other It. poems; he also wrote sev. tragedies.

Hoopa, or **Hupa,** name of an Indian tribe, about 650 in number, who inhabit the Hoopa valley, California, and who formerly lived in vils. by the Lower Trinity R.

Hooper, John (c. 1495-1555), divine, b. in Somerset. He was educ. at Oxford, and on leaving the univ. entered the Benedictine monastery at Gloucester, where he was ordained. He became an ardent reformer, and after a dispute with Gardiner had to flee from England in 1539. On his return he was made bishop of Gloucester in 1550 after a short imprisonment due to his unwillingness to wear the prescribed episcopal vestments. In 1552 he received the bishopric of Worcester in commendam, but in 1553 he was deprived of his office by Queen Mary and burned as a heretic at Gloucester. See S. Carr (ed.), *Writings of John Hooper*, 1843-52.

Hooping Cough, see WHOOPING COUGH.

Hoopoe, bird celebrated in literature, and conspicuous by its plumage and its large erectile crest. The common H. (*Upupa epops*) is about the size of a thrush, with a long, pointed and slightly arched bill. Its head and neck are of a golden buff, the former being adorned by the crest which begins to rise from the forehead and consists of broad feathers, gradually increasing in length, tipped with black, and having a subterminal bar of yellowish-white. The upper part of the back is of a vinous-grey, and the flight-feathers and tail are black, broadly barred with white. This bird visits Britain during the spring and autumn migration, but seldom breeds in any part of the is. Besides the *U. epops*, there are *U. indica*, which frequents India and Ceylon; *U. longirostris*, common in the Indo-Chinese countries, *U. africana*, which inhabits South Africa, and *U. marginata*, found in Madagascar.

Hoorn, small tn in the prov. of North Holland, Netherlands, on the W. coast of the IJsselmeer (Zuider Zee), 25 m. NNE. of Amsterdam. It is a picturesque tn with most interesting old buildings. There are noted cheese and cattle markets, besides shipbuilding and saw-milling yards. Willem Schouten, who doubled

the S. cape of America in 1616 and named it Cape Horn, was b. here. Pop. 15,600.

Hoose, see HUSK.

'Hoosier State,' see INDIANA.

Hoove, Hoven, or **Tympanites**, common derangement in ruminants due to the accumulation of gases in the rumen or first stomach. H. is most commonly met with when animals are allowed to eat immoderately of clover or lush pasture. Before turning for the first time into luxuriant pasture, they should be well fed on dry stuffs. Too much wet grass or frosted turnips or too many potatoes are other causes. The usual treatment is 1 wineglassful of turpentine in 1 pint of raw linseed oil. If this fails to yield results, the stomach is punctured with a trocar and cannula, or even a pocket knife, to liberate the gas.

Hoover, Herbert Clark (1874-), 31st President of the U.S.A., b. West Branch,



U.S. Information Service, American Embassy

HERBERT HOOVER

Iowa. H. is descended from Andrew H., who was b. at Ellerstadt in the Palatinate and emigrated to the U.S.A. in 1738, settling in Pennsylvania. H.'s own father, Jesse Clark H., was the vil. blacksmith of West Branch. On both sides of his family he is of Quaker ancestry, and himself belongs to that faith. In 1895 he began his career as a mining engineer. At the outbreak of the First World War he was appointed chairman of the Commission for Relief in Belgium. When the U.S.A. declared war on Germany, President Wilson summoned H. home from Europe to become the food administrator. Wilson later made him a member of the War Trade Council, and as such he took part at Paris in the negotiation of the Versailles Treaty. After the armistice, he was entrusted with the formidable task of directing the Amer. Relief Administration, whose function it was to supply food and clothing to many of the needy countries of Europe. In 1920 Harding appointed H. to his Cabinet, making him

secretary of commerce. He held the same post under Coolidge. The Republicans nominated him for President in 1928, and H. was elected by an overwhelming majority. Immense hopes were reposed in him. But in the Senate Radical Republicans united with the Democrats in attacking his policies. The farmers were disaffected on account of the low prices their products were fetching. The Republican partisans in Congress passed a new tariff Bill which was the highest on record, and against which many economists, Republican papers, and even manufacturers protested. Nevertheless, H. signed the Bill. Then came the Stock Exchange crash of the autumn of 1929, followed by universal depression in business and nation-wide unemployment. To all these troubles was added acute suffering in the farming states in 1930, caused by drought. In the Congressional elections of 1930 H.'s party suffered enormous reverses. New York State re-elected the Democrat, Franklin D. Roosevelt, as governor by the largest majority in hist. The Republican majorities in both houses of Congress were wiped out. The 71st Congress ended its existence in bitter fighting with the President. In 1932 H. was heavily defeated in the presidential election by Franklin D. Roosevelt, and his term of office ended in 1933. Since 1933 H. has generally given his support to the more isolationist and traditionalist wing of the Republican party. In 1946 he was appointed chairman of the U.S. Gov.'s Famine Emergency Committee. Pubs.: *The Challenge to Liberty*, 1934, *Addresses upon the American Road*, 7 vols., 1938-55, *America's First Crusade*, 1941, *The Basis for Lasting Peace*, 1945. *The Memoirs of Herbert Hoover, 1874-1941*, 3 vols., 1952-4. See monograph by W. Irvin, 1928; and Myers and Newton, *The Hoover Administration*, 1936.

Hoover, John Edgar (1895-), Amer. lawyer and criminologist, b. Washington, D.C. He studied law at evening classes at George Washington Univ. while a clerk in the Library of Congress, and entered the U.S. Dept. of Justice in 1917. In 1921 he became assistant director of the Bureau of Investigation (re-organised in 1924 as the Federal Bureau of Investigation, and commonly known as the F.B.I.), and became its director in 1924. He took a prominent part in establishing the F.B.I. as one of the most successful depts for criminological research in the world. His pubs. include *Persons in Hiding*, 1938, and *Masters of Deceit*, 1958.

Hop (*Humulus lupulus*), perennial herbaceous plant belonging to the family Cannabaceae, which has long twining stems which climb freely over hedges and bushes. Its leaves are stalked and 3 to 5 lobed and very rough to the touch, the plant being of luxuriant growth and abundant foliage. The H. is peculiar in having unisexual flowers, the male and female flowers being borne on different plants. The male flowers consist of a small 5-parted perianth enclosing 5 stamens, and

grow in loose panicles. The female flowers are in strobiles, or cones, and it is these ripened cones which are sold under the name of H., so that female plants are most generally planted, a few male only being necessary to fertilise the female flowers. The H. is first mentioned by Pliny as being a garden plant of the Romans, who were in the habit of eating the young shoots as we eat asparagus (indeed in Belgium the young tender tops are even now cut off in spring and used as food, the plant being forced from Dec. to Feb. for that purpose), and as early as the 8th and 9th cents. H. gardens (*humularia*) were cultivated in France and Germany for the manu. of beer; but up to the 16th cent. the plant seems only to have been grown in a fitful manner. It was introduced into England from Flanders in 1525, but did not become sufficient for the supply of the kingdom till the end of the 17th cent. The chief coe. concerned with H. production in England are Kent, Hereford, Sussex, Worcester, Hants, and Surrey, and of these Kent has always taken the lead, and includes about two-thirds of the 20,000 ac. grown in Britain; indeed, out of 413 pars. in the co., about 335 have H. plantations. These are prepared in Oct. and Nov.; the earth is ploughed, dug, and manured (for a rich soil is required) and the plants put in in rows 6 ft apart. Later they are poled and dressed, the former being done in various ways, and at various times. Some owners pole their plants the first year to produce H.s in the first season, but as a rule planters nurse their young plants for 12 months as they make very little growth the first year. When the cones are ripe, i.e. have become amber coloured and firm, they are picked and conveyed to the oast house to be dried; great care is required to prevent over-heating, by which the essential oil would be volatilised. H. cultivation requires much skill because not only is the plant subject to various pests and fungal and virus diseases, but much specialised labour is required in growing and harvesting the crop. Marketing and hence the acreage grown are controlled by a H.s Marketing Board. See D. Skilbeck, *Hops*, 1931. See also BREWING. (See illustration, p. 562.)

Hope, Anthony, see HAWKINS, SIR A. H.
Hope, Bob (real name Leslie Townes Hope) (1904-), actor and comedian, b. London, but his family emigrated to the U.S.A. in 1907. He began in variety, obtained his first important stage part in 1932, and his first radio part in 1935. He entered films in 1938, and his pictures include *Thanks For The Memory*, *The Cat and the Canary*, *Caught in the Draft*, *My Favorite Blonde*, *Nothing but the Truth*, *My Favorite Brunette*, *The Paleface*, and a famous series of 'Road' films with Bing Crosby (*Road to Singapore*, etc.). He also has radio and television features and has written *I Never Left Home*, 1944, and *This Is On Me*, 1954. He specialises in the wisecracking type of humour.

Hope, Thomas (c. 1770-1831), novelist and antiquary, b. London. A lover of

architecture, paintings, and statues, he formed a great collection of works of art, was a discerning patron of the arts, and in 1807 pub. a work on *Household Furniture* which produced a marked improvement in public taste. He also wrote *Costume of the Ancients*, 1809, *Modern Costumes*, 1812, and an *Historical Essay on Architecture*, 1835. His romantic novel, *Anastasiu*, 1819, created great literary interest.

after passing through the hands of sev. people was bought in Paris in 1911 by Edward Beale McLean for \$260,000. Shortly after the purchase his son was killed, and when Mrs McLean d. in 1947 the Russian Gov. opened negotiations for the purchase of the diamond. Nothing came of these negotiations, and the stone was sold to Mr Harry Winston, a New York diamond merchant, in 1949. The price of the H. D. was not disclosed, but he



KENTISH HOP-PICKERS

Whitbread & Co.

Hope, *Queen's Hope*, or *Estyn*, par., and vil. of that par., on R. Alyn, Flintshire, Wales, 7 m. NNE. of Wrexham. Pop. (of vil.) 1000.

Hope Diamond, beautiful 44-carat stone of a rare sapphire colour, which for long was supposed to bring misfortune to its owners. Its hist. began about 300 years ago when it was reputed to have been stolen from a Burmese temple, where it had formed the eye of an idol. It was sold to Louis XIV, and Louis XVI is said to have given the diamond to Queen Marie Antoinette. Later the diamond turned up in Amsterdam, where it was bought by a member of the Hope family to which the duke of Newcastle belonged, and so became known as the H. D. It was afterwards sold to a New York jeweller, and

is said to have paid between \$1½ and \$1½ million for it along with 73 other jewels formerly owned by Mrs McLean. See also **DIAMOND**.

Hope Islands, cluster in Van Diemen's Gulf, Northern Territory, Australia.

Hopei (formerly *Chihli*, or *Chihli*), prov. of China, in the extreme NE., bordering on Mongolia on the N., Manchuria and the gulf of Chihli on the E. Area about 153,738 sq. m. The greater part of the prov. is a fertile alluvial plain, watered by the rivs. Pailho, Hungho, Lwanho, Hutoho, and Shangho, and traversed by the Imperial Canal. Millet, maize, wheat, cotton, sugar, indigo, tobacco, and fruit are grown. It has many tanning factories. The climate is moderate, but much damage is occasionally caused by

floods in the plains and by violent dust storms. There was a severe famine in the prov. in 1842, and it suffered considerably during the Taiping revolt. Tientsin is the seat of administration. There is fair railway communication. In 1914 the part of the prov. beyond the Great Wall was transferred to Inner Mongolia, and Peking and the country round formed into a separate dist., but in 1954, by a gov. decree, the prov. incorporated part of the former provs. Jiho and Chahar. Pop. (including many Muslims) 35,984,644 (1954). The Gulf of Chihli is an extension of the Yellow Sea, lying between Korea and the prov. of Shantung, and receiving the waters of the Peiho.

Hopetoun, Earl of, see LINLITHGOW.

Hopetown, div. of Cape Province, South Africa. The tn of this name near the Orange R. is 70 m. SSW. of Kimberley. There are diamond fields and ostrich farms in the vicinity. The discovery of the Kimberley diamond mines is traced to the incident of Erasmus Stephanus Jacobs picking up the first diamond in the region on his father's farm, De Kalk, near H., in 1866. Pop.: whites, 840; coloured, 1495; others, 328.

Hopi, a Pueblo Indian tribe of Arizona, famed for their Pueblo (q.v.) culture and their spectacular snake dance held every 2 years. They trace descent in the matrilineal line. To-day they number about 3500.

Hopkins, Esek (1718-1802), Amer. naval officer, b. Scituate, R.I.; appointed by Congress, 1775, first Commander-in-Chief of Amer. Navy with title of admiral. He was dismissed for allowing the *Glasgow* to escape.

Hopkins, Sir Frederick Gowland, O.II. (1861-1947), biochemist, b. Eastbourne; studied at Guy's Hospital, and was Ph.D. London, 1894. In 1892 H. devised a reliable method, still in general use, for the estimation of uric acid in urine. In 1898 he went to Cambridge Univ. to teach chem., where he made in 1901 the first of his great discoveries: in collaboration with S. W. Cole he isolated and identified the amino-acid tryptophane. In 1914 a professorship of biochemistry (the first of its kind) was created for him, to terminate with his tenure of office; in 1921 he became the first Sir Wm Dunn prof. of biochemistry. The results obtained by H., working first with Fletcher (1905-6) and later with Dixon (1921), revolutionised the conception of the source of muscular energy and oxidation of tissues. The earlier work, showing the formation of lactic acid during muscular contraction in the absence of oxygen, and the presence of mere traces of this product in the resting muscle and during contraction in the presence of oxygen, led to the abandonment of the theory of storage of intramolecular oxygen. Later, H. and Dixon isolated glutathione, a constituent of plant and animal tissues, and showed that other cell products reduced this substance immediately it was oxidised. Glutathione was therefore regarded as the centre of autoxidation in the cell. H. was

the first to show that life could not be maintained on protein, fat, and carbohydrate alone, but that 'accessory food factors' were essential. He thus initiated the research on vitamins (q.v.). He also discovered and investigated the biological role of many other compounds. From 1930 to 1935 he was president of the Royal Society. In 1928 he was given the Society of Apothecaries Medal, and in 1929 shared the Nobel Prize for physiology. He was knighted in 1925 and was awarded the Order of Merit in 1935. See autobiography in *Hopkins and Biochemistry*, ed. by J. Needham, 1949.

Hopkins, Gerard Manley (1844-89), priest and poet, b. Stratford, Essex, now a part of greater London, son of the consul for Hawaii. He was educ. at Highgate School, where one of the masters was R. W. Dixon, with whom he corresponded about prosody in later years, the letters being pub. in 1935. From there he went to Oxford, where he formed a friendship with Robert Bridges (q.v.). While still an undergraduate H. was converted to Rom. Catholicism, and after teaching for some time at a school in Birmingham he decided to become a Jesuit. Ordained in 1877, he worked in London, Oxford, Liverpool, and Glasgow, and later was a teacher at Stonyhurst. In 1884 he was appointed prof. of classics at Univ. College, Dublin, but his sensitive nature made the work arduous. H. himself pub. none of his verse, but his first characteristic poem, 'The Wreck of the Deutschland,' was written in 1875, and his famous 'Windhover' not long afterwards. Thirty years after his death Dr Bridges ed. these and other poems in a slim vol. whose appearance in 1918 was very apposite, for H. was so far in advance of his time that poetic fashion was only then beginning to catch up with his work. Both his oddity and his obscurity are essentially modern, as is his 'sprung rhythm,' reckoning by stresses instead of by syllables; this, although not really an innovation, was used by him for new and elaborate effects. In its religious intensity and vigour of expression his work has been compared with that of the O.E. poets, whom he also resembled in his use of compound epithets. Among his best-known poems are 'God's Grandeur,' 'Pied Beauty,' and 'Inversnaid.' Vols. of his *Letters* were pub. in 1935 and 1938, and his *Notebooks and Papers* were ed. by H. House, 1937. See studies by G. F. Lahey, 1930; E. E. Phare, 1933; B. W. Kelly, 1935; J. Pick, 1942; W. H. Gardner, 1944; E. Ruggles, 1947; and W. A. M. Peters, 1948.

Hopkins, Harry Lloyd (1890-1946), Amer. social reformer, politician, and administrator, b. Sioux City, Iowa, U.S.A., and educ. at Grinnell College, Iowa. Roosevelt made him acting director of the New York State Temporary Emergency Relief Administration and, after his election as President, Federal Relief Administrator, in which capacity H. spent \$9 million in relieving unemployment, especially by building public works on a nation-wide scale. It was during these years at

Washington that H., who was in close touch with the White House, became the close friend of Roosevelt. In 1938 the President appointed him Secretary of Commerce, and when, in 1940, ill-health compelled his retirement from the post H. had won a wide measure of confidence among business men. By the time of the Democratic Convention of 1940 H. had sufficiently recovered to work at the White House, becoming a resident there and a member of the Roosevelt household. Later, as virtual secretary to the Inner War Cabinet, H. became personal assistant to the President and his closest confidant. In Jan. 1941 Roosevelt sent him to London as his personal emissary and later to Stalin in Moscow. In the same year the President made him head of Lend-Lease Administration. After Roosevelt's death, H. again went to Moscow as Truman's envoy and was instrumental in the partial solution of the difficulty on the veto which had arisen at the San Francisco Conference (q.v.). The strain of the Moscow journey, however, on his health prevented him from attending the meeting of the representatives of the 3 major allies in Berlin in July 1945, and from Nov. he was a patient in the New York Memorial Hospital, dying on 29 Jan. 1946. His was truly a remarkable career. From an earnest and single-minded social reformer he became one of the leading administrators of the New Deal (q.v.) and a trusted emissary on diplomatic missions of the highest importance. Despite ill-health he accepted, in the early stages of the war, the most onerous responsibilities, instilling a confidence in the goodwill and power of his country which was a source of immense inspiration to its allies. See R. Sherwood (ed.), *The White House Papers of Harry L. Hopkins* (2 vols.), 1948-9; *Roosevelt and Hopkins*, 1948.

Hopkins, John (d. 1570), Brit. hymn writer. He was part translator with Thomas Sternhold of the famous metrical version of the Psalms. Of the complete ed. which appeared in 1562, 60 psalms bore the name of H., and 40 that of Sternhold. H. also contributed some commendatory verses to Foxe's *Acts and Monuments*, and is often credited with the authorship of the 'Old Hundredth.' He was rector of Great Waldingfield, Suffolk, 1561-70.

Hopkins, Johns (1795-1873), Amer. philanthropist, b. in Anne Arundel co., Maryland. His Quaker parents educ. him for a farmer, but at the age of 17 he went to Baltimore and became a wholesale grocer, eventually founding the house of Hopkins Brothers, and amassing a large fortune. This he devoted to various philanthropic purposes; he presented Baltimore with a public park, and founded the Johns Hopkins Univ. and the Johns Hopkins Hospital.

Hopkins, Mark (1802-87), Amer. educationist, b. Stockbridge, Massachusetts. He was appointed prof. of moral philosophy at Williams College in 1830, and was president of the college 1836-72. His pubs. include: *Lectures on the*

Evidences of Christianity, 1846, *Lectures on Moral Science*, 1862, *Outline Study of Man*, 1873, *Teachings and Counsels*, 1884. See life by F. Carter, 1892; and *Early Letters of Mark Hopkins*, 1929.

Hopkins, Samuel (1721-1803), Amer. theologian, b. Waterbury, Connecticut. He studied under Jonathan Edwards, and in 1743 was ordained at Housatonic, now Great Barrington, Massachusetts, where he continued until 1769, when he became minister of Newport, Rhode Is. He was an opponent of slavery, and in 1776 pub. *Dialogue . . . Showing It To Be the Duty and Interest of the American States to Emancipate All Their African Slaves*. His *System of Doctrines Contained in Divine Revelation, Explained and Defended*, 1793, sets forth his theological opinions, which differ from orthodox Calvinism in their opposition to the doctrines of original sin and of the Atonement. The pub. of his views was the cause of the famous 'Hopkinsian controversy.' H. is the central figure in Mrs Stowe's novel, *The Minister's Wooing*, 1859. See life by S. West; W. Walker, *Ten New England Leaders*, 1852; and F. B. Dexter, *Biographical Sketches of the Graduates of Yale College*, 1885, vol. 1, pp. 184-7.

Hopkins, William (1793-1866), mathematician and geologist, b. Kingston, Derbyshire. He entered Peterhouse, Cambridge, in 1822, and became seventh wrangler in 1827. He settled at Cambridge as a tutor, and was so successful in his work that he was called the senior wrangler maker; indeed, in 1849 he had nearly 200 wranglers among his pupils, amongst whom may be mentioned such distinguished men as Todhunter, Tait, Fawcett, Stokes, and Clerk-Maxwell (qq.v.). In 1833 he began to study geology, and in 1850 received the Wollaston medal for his researches in the application of mathematics to physics and geology. His pubs. include *Elements of Trigonometry* 1833, and *Theoretical Investigations on Motion of Glaciers*, 1842.

Hopkins, riv. of W. Victoria, Australia. It rises in the Pyrenees Mts and flows in a generally S. direction to the Indian Ocean at Warrnambool. Only about 5 m. are navigable. Length 110 m.

Hopkinson, Francis (1737-91), Amer. statesman and author, b. Philadelphia. He was educ. at the univ. of Philadelphia, and then studied law. In 1776 he was elected representative of New Jersey in the Amer. Congress, was a signer of the Declaration of Independence, and designed the U.S. flag. He was appointed judge of the Admiralty in Pennsylvania, 1779, and judge of the Dist. Court of the U.S.A. H. was a versatile writer and was very popular during the revolution, when he wrote his famous ballad *Battle of the Kegs*. His writings include: *The Treaty*, 1761, *Science*, 1762, *A Pretty Story*, 1774, *A Prophecy*, 1776, *A Camp Ballad*, 1777, *The Political Catechism*, 1777, and *Essay on Whitewashing and Modern Learning*, 1784. See G. E. Hastings, *Life and Works of Francis Hopkinson*, 1926.

Hopkinson, John (1849-98), electrical engineer, b. Manchester and educ. at Trinity College, Cambridge, where he graduated as senior wrangler. He then took up electrical engineering, and made many important investigations, in 1890 being awarded a royal medal for researches in electricity and magnetism. He was prof. of electrical engineering at King's College, London, at the time of his death. He pub.: *Dynamic Electricity and Original Papers on Dynamo Machinery and Allied Subjects*, 1893, and other papers. He was killed with a son and 2 daughters ascending the Dent de Velser in the Alps.

Hopkinson, Joseph (1770-1842), son of Francis H., b. Philadelphia and educ. at the univ. there. He studied law and practised at Easton and Philadelphia. H. was a member of the national House of Representatives from 1815 to 1819, and judge of the Dist. Court of the U.S.A. in 1819. He was also vice-president of the Amer. Philosophical Society and president of the Philadelphia Academy of Fine Arts. He pub. some of his addresses which he delivered before various societies, but he will be chiefly remembered for his song, *Hail, Columbia*, 1798. See life by Francis Wharton; R. Griswold, *Poets and Poetry of America*, 1842; and B. A. Konkle, *Joseph Hopkinson*, 1931.

Hopner, John (1758-1810), portrait painter, b. Whitechapel, London. He was admitted as a student to the Royal Academy in 1775, and in 1782 gained the gold medal for an original painting of a scene from *King Lear*. In 1785 he exhibited portraits of the youngest 3 princesses, Sophia, Amelia, and Mary, and in 1789 was appointed portrait painter to the Prince of Wales. In 1795 he was elected R.A. H. acquired some reputation in his own day, especially for his portraits of women and children. His figures were graceful, and his colouring mellow, though his work was somewhat trivial in its prettiness. Some of his best pictures are the group of 'Lady Culling Smith and Children' (belonging to the Duke of Wellington), the fine portrait of 'Mrs Lascelles' (the property of Lord Harewood), both of which were exhibited at the Royal Academy, 'The Countess of Oxford' (National Gallery, London), 'William Pitt' and 'Lord Grenville' (National Portrait Gallery). See W. Mackay and W. Roberts, *Life and Paintings of J. Hopner*, 1909.

Hopscotch, children's pavement game, so called because it reached England from Scotland, and since in Scotland it is known as 'peevers,' which is a corruption of 'pierre,' it may have reached Scotland from France. There are sev. types of H. diagram, the most common being the 'pillar-box,' the 'small,' and the 'aeroplane.' The diagram is drawn in chalk, being divided into sev. 'beds,' normally 8. The first player flicks a stone into each bed in turn and follows up by hopping in and out of the beds in a specific order. If he foots a line, lowers the raised leg, throws or hops the beds in the wrong order, or hesitates unduly, he fails.

If he succeeds he initials a bed, and the next player tries, avoiding the initialled bed. The game ends when all beds are initialled. The game of ball beds is H. with a ball, which is bounced once and caught in each successive bed.

Hogulam, tn, Washington, U.S.A., co. seat of Grays Harbor co., 18 m. W. of Montesano. It is surrounded by timber lands. It has large lumber and shingle mills, also plywood and veneer plants. It ships lumber, fish, and furs. Farming and dairying are also carried on. There are shipyards and a fine harbour. Pop. 11,123.

Horace (Quintus Horatius Flaccus) (65-8 bc), Rom. poet, b. at Venusia in Apulia. He was of servile descent, but his father had acquired the status of freedman, and from his profits as auctioneer's collector had been able to purchase a small farm at Venusia. One of the most endearing traits in the character of H. is his reverence for his father. H.'s father recognised the genius of his son and, comparatively poor though he was, he contrived to give him the best education obtainable by a Rom. youth. He therefore declined to send the boy to a prov. school, and had him educ. in Rome at the school of Orbilius, where the sons of knights and senators were trained. The father himself acted as attendant on the boy, accompanying him to school. In H.'s time many Rom. youths received their univ. training at Athens, and thither H. repaired about the age of 20. When Brutus went to Athens to levy forces against Octavian, H. enlisted in his service and was given the rank of military tribune in command of a legion. He was on the field at Philippi, and his depreciation of his own valour must be regarded as an imitation of Archilochus and Alcaeus, and not as serious information (*Odes* II, vii. 9; *Epistles*, II, ii. 46-50). In the land settlements after the war. H.'s paternal property at Venusia was confiscated and he became a scribe in the quaestor's office at Rome. Varius and Virgil introduced the young poet to Maecenas, who became his life-long patron and friend. Maecenas, in turn, introduced him to Augustus, who soon, to the glory of Rome and the fame of his protégé, enlisted his services to voice the ideals of his new empire. From this time H. became a court poet, but his genius was strengthened rather than cramped by the guiding influence of his patrons. In the year 33 bc Maecenas presented to the poet the Sabine farm, which throughout the remainder of his life satisfied his deep-seated love of country life and scenery. Though towards the closing years of his life H. was drawn into the inmost bosom of the court, he never forgot his former patron. To his fervent love of Maecenas the seventeenth ode of the second book and the eleventh ode of the fourth book bear striking testimony. Maecenas himself, on his deathbed, thus commended the poet to the emperor, 'Horatii Flacci ut mei esto memor' (*Suet. vit.*), but H. only survived his patron a few weeks. H. d. suddenly and without

making a will, and to Augustus he left the entire control of his affairs. *H.'s earliest pub. was the first book of the *Satires* (c. 35 BC), followed by a second book c. 30 BC. These follow the didactic aims and semi-dramatic setting of the early *Satura* of Lucilius, but they are less personal in attack than the work of the early master. Unlike the fierce invective of Juvenal, the satiric vein in H. is for the most part kindly in tone. The *Epodes* appear to have been written between 41 and 31 BC. They are based on the works of Archilochus, but are sometimes coarse in sentiment and immature in expression. The *Epistles* are also didactic in theme, but the sentiment is mellow, and the workmanship perfect. In subject and style the *Ars Poetica*, a metrical treatise on the art of poetry, is closely allied to the second book of the *Epistles*. This work is somewhat desultory in treatment and capricious in judgment; its standpoint is uncompromisingly mechanical, yet it throws valuable light on H.'s own poetic methods, and the state of literary criticism at Rome. But H.'s great work was the *Odes*. These do not stand high on account of any startling originality of thought or depth of feeling, but in finish and technique they are perfect. The finest odes are, perhaps, those which deal with Rome's expansion and conquests; the love lyrics, although charming and graceful, are sometimes insincere and insipid, and are much inferior to the flaming lyrics of Catullus. The philosophy of H. is eclectic, but, if he inclines to any sect, he is Epicurean and *carpe diem* is his guiding precept. As a Rom. poet he is generally held to rank second only to Virgil.

EDITIONS: E. C. Wickham, 1903-4; F. Klingner, 2nd ed., 1950; *Odes and Epodes*, T. E. Page, 1895; J. Gow, 1906; *Satires*, A. Palmer, 1896 and J. Gow, 1901-9; *Epistles*, A. S. Wilkins, 1892. TRANSLATIONS: J. Conington, 1863-70; W. S. Marris, 1912; H. Macnaghten, 1926; H. E. Butler, 1929. STUDIES: W. Y. Sellar, *Horace and the Elegiac Poets*, 1899; J. F. D'Alton, *Horace and his Age*, 1917; A. Y. Campbell, *Horace, a new Interpretation*, 1924; T. R. Glover, *Horace*, 1932; T. Zielinski, *Horace et la société romaine*, 1938; L. P. Wilkinson, *Horace and his Lyric Poetry*, 1945; A. Noyes, *Portrait of Horace*, 1947; E. Fraenkel, *Horace*, 1957.

Horae (Lat. 'hours'), weather-goddesses, the personification of the seasons, the children of Zeus and Artemis, whose function it is to regulate the order of nature, superintend agriculture, etc. They are companions of the nymphs and graces, and are goddesses of youth and grace, typical of the spring. They are usually 3 in number, with parents as above, but Alexandrian influence turned them into the 4 daughters of Helios and Selene.

Horapollon (4th cent. AD), Gk grammarian, b. at Phaenobythis in Egypt. Various lost commentaries are ascribed to him by Suidas, and he has been wrongly credited with an extant work on *Hieroglyphics*.

Horatii, 3 Rom. brothers, chosen by King Tullus Hostilius to fight against the Curiatii (3 Alban brothers) in order to decide the contest between Alba Longa and Rome. Two of the Roms. quickly fell in the combat, but the surviving Horatius was victorious and was led back in triumph to Rome.

Horatius Coclès, legendary Rom. hero who, along with Titus Herminius and Spurius Lartius, held the bridge over the Tiber against Lars Porsena, king of Clusium, in 507 BC. H. sent back his 2 companions when the fight was almost finished and defended the bridge single handed. He then escaped by swimming the Tiber, though enteebled by wounds, and was overwhelmed with honours by his compatriots. The story was probably invented to explain a primitive statue of Vulcan opposite the Subilican bridge.

Hordaland, co. of Norway, on the Atlantic coast, with Buskerud and Telemark cos. to the E. Popular tourist centre. Large hydro-electric development has created sev. industrial centres. Fishing and farming are also important. Chief tn, Bergen. Area 8043 sq. m. Pop. 198,000.

Hörde, Ger. tn in the *Land of North Rhine-Westphalia*, a SE. suburb of Dortmund (q.v.).

Hordeolum, see STYE.

Horder, Thomas Jeeves, 1st Baron **Horder of Ashford** (1871-1955), physician, b. Shaftesbury, Dorset. He studied medicine at St Bartholomew's Hospital, where from 1912 he was successively assistant physician, physician, and consulting physician. He was physician to Edward VIII and George VI, and Extra Physician to the present Queen, consulting physician to the Royal Orthopaedic and Royal Northern Hospitals; honorary consulting physician to the Ministry of Pensions. H. was a great bedside teacher, revered by his staff and students. His interests were wide; he was president of a number of societies, including the Medical Society of London, Fellowship for Freedom in Medicine, and the Family Planning Association. His writings include: *Clinical Pathology in Practice*, 1907, *Cerebro-Spinal Fever*, 1915, *Essentials of Medical Diagnosis* (with A. E. Gow), 1928, *Health and a Day*, 1937, *Health and Social Welfare*, 1945, *The Philosophy of Jesus* (with H. Roberts), 1945. He was knighted in 1918; created baronet in 1923, and baron in 1933.

Horeb, in the Bible, the mt on which God gave the law to Moses, though in other places the name is Sinai. Since the 4th cent. AD this mt has been identified with Jebel Musa in the peninsula of Sinai. The monastery of St Catherine lies at the foot of this mt. There are good reasons for believing that the Mt of the Law is E. of the Gulf of Aqaba in Arabia and the testimony to its location in the peninsula is late.

Horehound (O.E. *harhume*, Ger. *Ann-dorn*, Fr. *marrube*), species of perennial herbs, belonging to the family *Labiatae*, growing about 1 ft high, with thick stems

and a short rootstock. Most of the species are herbaceous plants occurring in Europe, North Africa, and W. Asia. Common or white H. (*Marrubium vulgare*) is found throughout Europe, and occurs in Britain on sandy or chalky ground, but is not at all common. Black H. (*Ballota nigra*), a perennial herb, is also a native of Britain, S. of the Forth and Clyde, and occurs also in Europe and North Africa. H. has likewise been naturalised in parts of America; it is used widely as a cough medicine.

Horgen, tn in the canton of Zürich, Switzerland, on the W. shore of Lake Zürich. Manufs. machinery, cotton, and silk. Pop. 11,000.

Horizon (Gk *horizein*, to bound), circular line around which the earth and sky appear to meet, most clearly defined at sea. The distance of the H. is measured by the length of the tangent from the observer's eye to the earth's surface.

The plane through an observer perpendicular to the line through him and the zenith or nadir cuts the celestial sphere in a great circle which is known as the *celestial H.* The circle whose plane passes through the centre of the earth parallel to the plane of the visible H. is called the *rational H.*

Horley, par. and residential vil. in Surrey, England, 5 m. SSE. of Reigate, and situated on the R. Mole. It possesses an Early Eng. church (St Bartholomew). Pop. 12,000.

Hormayr, Joseph, Baron von (1782-1848). Ger. historian, b. Innsbruck. In 1815 he was appointed historiographer of Austria, and in 1828 became councillor for the foreign dept of Bavaria, being Bavarian minister to Hanover in 1832. He wrote widely, among his works being: *History of Tyrol*, 1817, and *Vienna, Its History and Curiosities*, 1823.

Hormone (Gk *horman*, to set in motion). H.s are often referred to as the 'chemical messengers' of the body; chemical substances secreted by the ductless, or endocrine glands (q.v.) into the bloodstream and which bring about specific activity in distant cells and organs. The most highly complex interrelations exist between the glands. W. Bayliss and E. Starling prepared an extract, *secretin*, by digesting duodenal mucous membrane with hydrochloric acid. The product is soluble in alcohol, and is not destroyed by boiling. If secretin be injected into the blood, it leads to active stimulation of the pancreas. This H. is apparently naturally formed by the action of the acid chyme on some prosecretin in the intestine. It passes to the pancreas, which it stimulates to produce pancreatic juice. Since the discovery of secretin considerable advances have been made in the understanding of the function of endocrine glands and their H.s, and endocrinology is now an important branch of medical science. Much work remains to be done and one of the problems of research is to discover further biochemical tests with which to estimate

the nature and amount of the various H.s present in the blood, and hence to discover more about the function of those ductless glands whose role is not yet fully understood. It is now realised that a great deal of faulty body function, giving rise to clinical disease, is due to disorders of the endocrine system. The H.s in normal health are balanced in harmony with one another. They may be likened to the instruments of an orchestra, each instrument playing its part, sometimes loudly, sometimes softly, according to the need of the moment, and sometimes all the instruments playing together. Also, as with the instruments of an orchestra, the various H.s enhance each other's effect. The anterior pituitary gland (q.v.) has been called the 'leader of the endocrine orchestra' because the H.s which it secretes seem mainly to control the activity of other endocrine glands. Anterior pituitary H.s include (1) the thyrotrophic or thyroid stimulating H.; (2) the adrenocorticotrophic H. (A.C.T.H.) stimulating the adrenal cortex; (3) a H. which stimulates the ovarian follicles in the female and the seminiferous tubules in the male; (4) a H. known as the interstitial cell stimulating H. (I.C.S.H.) which seems to stimulate oestrogen formation in the ovary and maturation of the ovum (q.v.), leading to ovulation and formation of the corpus luteum; and (5) a lactogenic H., prolactin, which stimulates lactation and, under certain conditions, such as pregnancy, tends to preserve the corpus luteum. Nos. (3), (4) and (5) are known as the gonadotrophic H.s. The posterior pituitary secretes H.s which have 3 main actions. First, by means of the antidiuretic H., urinary output is diminished (see DIABETES INSIPIDUS); secondly, vasoconstriction and contraction of intestinal muscle is caused by another H.; and a third produces contraction of the pregnant uterus. The prin. H.s secreted by the adrenal cortex are the corticosteroids, cortisone and hydrocortisone, and the androgens. The latter stimulate the laying down of body protein and may also induce masculinisation. Androgens are also secreted by the interstitial cells of the testis. The former are concerned in carbohydrate metabolism and in protecting the body against the effects of stress. The metabolic end products of the corticosteroids are excreted in the urine as 17-ketosteroids and 11-oxysteroids. Adrenocortical activity may be estimated by measuring the output of 17-ketosteroids in the urine. In adults the normal output in 24 hrs is from 8 to 22 mg. in males and 5 to 14 mg. in females. In children under 8 years it is below 1 mg. At present there are no reliable quantitative tests for 11-oxysteroids in the plasma or urine. Adrenocortical efficiency may be ascertained by giving injections of A.C.T.H. and then estimating the 17-ketosteroid urinary output. If the adrenal cortex is failing in function then there will be no increase in the 17-ketosteroid excretion. Conversely, an increase in

output indicates that the adrenal cortex is functioning normally. As already stated, the output of thyroxine from the thyroid gland (q.v.) is stimulated by the thyroid stimulating H. of the anterior pituitary gland. Thyroxine, in its turn, stimulates metabolism. Thyroid function may be determined either by estimating the basal metabolic rate or by measuring the amount of radioactive iodine taken up by the thyroid gland following a test dose of the radioactive substance (see THYROID GLAND). Before puberty the gonads (the ovaries in the female and the testis in the male) are physiologically functionless. For reasons as yet unknown, the anterior lobe of the pituitary gland begins to secrete gonadotrophic H.s between the ages of 10 and 16. Under this influence the gonads begin to secrete their respective sex H.s, oestrogen in the female and testosterone in the male, which, acting on their target organs, produce the characteristic changes of puberty. Deficiency in gonad secretion in both sexes may be either primary or secondary. In the former the defect is in the gonad itself, which is unable to respond to gonadotrophic stimulation. In the latter the defect is in the anterior pituitary gland, which fails to secrete gonadotrophic H.s. Just as 17-ketosteroid urinary output can be measured, so there is a method of estimating the output of gonadotrophins, and this is useful in distinguishing between primary and secondary gonad deficiency. Gonad efficiency in the male may be estimated by semen analysis and by examining a sample of testicular tissue under the microscope for the presence of spermatozoa and to see whether the tissue cells show signs of abnormality. This is known as testicular biopsy. Tests for female gonad function are largely deductive. The direct study of ova is not practical. Occurrence of ovulation may be deduced by temp. recordings, by examination of endometrial scrapings (see UTERUS) and vaginal smears. It has been observed during the pre-ovulation stage of the menstrual cycle that the body temp. maintains a mean of 97° F., but after ovulation has taken place the temp. rises to a mean of 98.2° F. and remains there until the start of the next cycle. For ovarian function in relation to the menstrual cycle, see under UTERUS and OVARY. The function of the other endocrine glands and their H.s is described under the appropriate headings. For therapeutic purposes there are synthetic substitutes for a great many of the H.s. Growth substances present in plants are thought to be 'chemical messengers' of the same nature as H.s in animal physiology, but as yet the understanding of these substances is incomplete.

The role of H.s in the cause and treatment of cancer is at the moment uncertain and the question: 'Do H.s cause cancer; and do H.s cure cancer?' remains incompletely answered. Such knowledge as we now possess is largely confined to carcinoma of the breast and prostate.

The beneficial effect of removing the ovaries on breast cancer and of castration on prostatic cancer has long been known, and lead to the use of testosterone in breast cancer and stilboestrol in prostatic cancer. But relapses often occurred with this treatment, and it was thought that the adrenal androgens might also be concerned in stimulating new growth activity. Surgical removal of the adrenal glands was therefore tried. Early results were disappointing, but with the advent of cortisone, which could be issued for replacement therapy, the operation became a practical procedure for disseminated cancer of the breast and prostate. Symptomatic relief has been obtained in about 60 per cent of cases and disappearance of the primary growth and metastases in about 30 per cent. Attention is now being turned to the extirpation of the pituitary gland but it is too early yet for definite results to be known. The relationship of the pituitary growth H.s to cancer is obscure and much work remains to be done in the whole field of H.s and cancer.

See J. S. Kleiner, *Human Biochemistry*, 1951; S. Wright, *Applied Physiology*, 9th ed., 1952; P. M. F. Bishop, *Recent Advances in Endocrinology*, 1954; J. H. Priestley and L. I. Scott, *An Introduction to Botany* 3rd ed., 1955.

Hormones, Plant, see PLANT HORMONES.

Hormuz, or Ormuz, anct city on the Persian Gulf on the N.E. extremity of the is. of Ormuz. In the latter part of the Middle Ages it became a great emporium of the trade between Persia and India. In 1507 the ruler of H., after being defeated by Albuquerque, agreed to pay tribute to the Portuguese, but in the following year he returned to the allegiance of the Safavid ruler of Persia. In 1515 Portuguese supremacy was re-established. In 1622, as the result of a joint attack by Persian forces and an Eng. fleet, the Portuguese were evicted. H. after this declined rapidly, its trade being transferred to the new tn of Bandar Abbas. The ruins of the Portuguese fort still remain at the vil. of H.

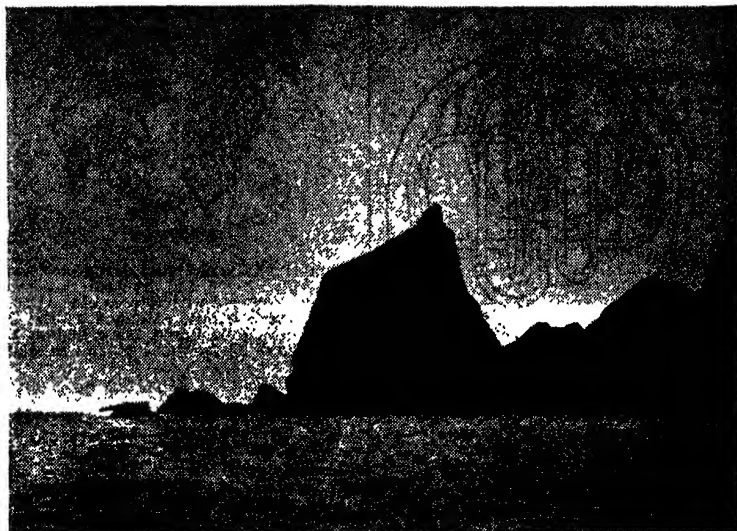
Horn, Arvid Bernard, Count (1644-1742), Swedish statesman, b. Vuorentaka, Finland. He served in the Swedish Army against France and gained rapid promotion, being sent in 1704 as Swedish ambas. to Warsaw, and helping in the deposition of Augustus of Poland. In 1705 he became councillor to the new King Stanislaus, and later as head of the party of 'Caps' practically ruled Sweden after the death of Charles XII, converting it into a limited monarchy. His party remained in power till 1738, when it was ousted by the 'Hats', and under him Sweden enjoyed a prosperity it had not known for many years.

Horn, Cape (Cabo de Hornos), generally considered the southernmost point of South America, at the S. of Horn Is. to the S. of Tierra del Fuego. Discovered in 1616 by the Dutch navigators, Lemaire and Schouten, and named after the Dutch tn Hoorn, the bp. of the latter. It now

belongs to Tierra del Fuego, Magallanes prov., Chile.

Horn (Fr. *cor*, *cor de chasse*, Ger. *Horn*, *Waldhorn*, It. *coro*), brass wind instrument, used in orchestral music, with a particularly mellow tone, due chiefly to the funnel-like bore of the mouthpiece, but also to the length of tube and shape of bell. Originally it was employed in hunting from a very early period, but was introduced into the orchestra at the beginning of the 18th cent., and now holds one of the most important positions as a

concertos and has been used effectively in chamber music. It consists of sev. spiral coils, with a funnel-shaped mouthpiece at the upper end and a bell at the lower end of the tube, the length of which is varied by the introduction of crooks of different lengths. Music for the H. is written in the treble clef, the notes actually sounded depending on the crooks used. In 1770, Hampel, at Dresden, discovered the method of forming intermediate notes by hand-stopping, viz. introducing the open hand with fingers close together into the



CAPE HORN

Hulton Picture Library

brass instrument with a tone blending as well with woodwind as with other brass instruments. In its early stages it could produce only the natural harmonics. When composers began to write for it they could use only those notes, usually in the key of F, in which it was pitched as a rule; but after the invention of a series of crooks which could be inserted, the length of the tube could be altered and the instrument played in a variety of keys. Some extra notes, of rather uncertain quality, could also be obtained by inserting the hand into the bell. It was only by the introduction of valves about the 1830's that the full chromatic scale could be played on a single instrument. Compass is about $3\frac{1}{2}$ octaves from (on the H.) B flat below the staff in the brass clef. It is seldom used singly in the orchestra, 2 or 4 being the usual number, but it is a good solo instrument for

bell, and thus lowering the pitch by a semitone. Nowadays the H. is provided with valves which bridge over the intervals and render the hand-stopping unnecessary.

Horn (animals), see HORNS.

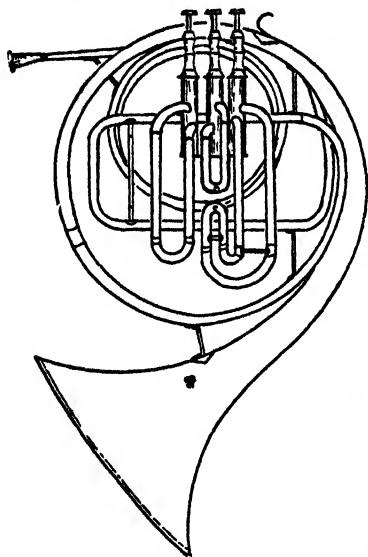
Horn-fly, see DIPTERA.

Horn-silver, see CERARGYRITE.

Hornbeam, or *Carpinus*, genus of 20 deciduous trees of the Betulaceae. The common H. of Britain, Europe, and Asia Minor is *C. betulus*. There are also Amer., Chinese, Korean, and Jap. species; all resembling beech, but with rougher leaves, unisexual flowers, and pendent fruit clusters in autumn.

Hornbill, name given to the many species of coraciiform birds belonging to the family Bucconidae. They are of considerable size, and derive their name from their immense, dentated, downward-curved beak, with the horn-like casque at

the base. The species range from Africa, India, to the Malayan region, and are remarkable for their slow and heavy flight, which, however, is counter-balanced by the pneumatic nature of their bones. The members of *Bucorvus* are omnivorous and feed chiefly on the ground, their food consisting of roots, insects, tortoises, etc. During breeding the female is imprisoned by the male in the hollow of a tree which he plasters up, leaving only a small slit for the admission of food. *B. abyssinicus* is the best-known species, other genera being *Rhinoplax*, *Accros*, *Lophoceros*, and *Anorhinus*.



Hornblende, commonest member of the amphibole group of rock-forming minerals. It is of all colours, but the name is generally restricted to the black or very dark green varieties. It is similar to augite (q.v.), from which it can only be distinguished by its cleavage angle. The monoclinic crystals are prismatic in habit with a 6-sided cross-section; the angle between the prism-faces, parallel to which there are perfect cleavages, is $55^{\circ} 49'$. In metamorphic rocks it forms irregular masses without definite crystalline form. The dichroism is always marked. H. occurs as an essential constituent of many igneous rocks, and many crystalline schists are almost entirely formed of it.

Hornblende Schist, crystalline metamorphic rock rich in hornblende, showing a tendency to part along closely-spaced schistosity planes.

Hornbook, primer, formerly used by children in England to learn the elements of reading, prior to the days of printing. It consisted of a piece of paper or parchment on a tablet of wood, with a slice of transparent horn in front, hence the name.



HORNBEAM

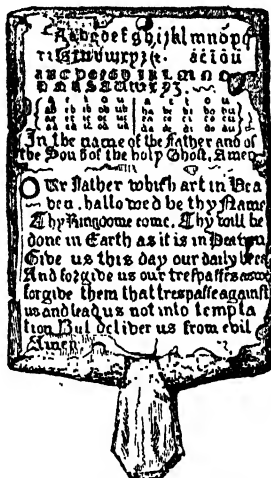
It contained the alphabet, large and small, the Lord's Prayer, and the Rom. numerals, and was prefaced with figures of the Cross. There was a handle attached to it. By means of a hole bored for a string, the book could be fastened to the scholar's girdle.



HORNBILL

Hornbostel, Erich von (1877-1935), Austrian musicologist, b. Vienna. Studied physics and philosophy at Vienna and Heidelberg, and in 1906 became head of the gramophone archives in Vienna for the recording of the music of primitive peoples, on which he wrote sev. learned works. In 1923 he went to Berlin, in 1933 to New York, and the following year to London and Cambridge.

Horncastle, mkt tn of Lincs, England, 130 m. N. of London. The church of St Mary is, in part, Early Eng., and Queen Elizabeth's Grammar School dates from 1562. The great horse fair, described by George Borrow in *Romany Rye*, is still held annually in the second week of Aug., but has lost much of its importance. The chief industries are agric. engineering, malting, and canning. Pop. 3862. See J. C. Walter, *History of Horncastle*, 1908.



A SEVENTEENTH-CENTURY
HORNBOOK

Hornchurch, urb. dist. of Essex, England, 14 m. E. of London, and including Upminster, Cranham, North Ockendon, Harold Wood, Elm Park, and Rainham. It has an area of 20,308 ac., partly agric., and partly industrial and residential. The R.A.F. station achieved considerable distinction during the Battle of Britain. Pop. 105,100.

Horne, Henry Sinclair, Lord (1861-1929), general, b. in Caithness. Educ. at Harrow and Woolwich. Began his military career in the Royal Artillery in 1880. Served in the South African war (1899-1902) with distinction. Served throughout the First World War (1914-18), being mentioned repeatedly in despatches. For his distinguished services at Mons and the first battle of the Marne (1914) he was promoted to the rank of major-general. Later he was appointed to the command of an army corps, and after the battles of the Somme he received a knighthood (Oct. 1916). In the fierce fighting at Vimy Ridge and the battle of Arras (1917) he gained further distinction and was placed in command of the First Army.

In the Arras area his army took nearly 20,000 prisoners and 200 guns (26 Aug.-3 Sept.). In conjunction with the Third and Fourth Armies, his army group won the 3 great battles of Cambrai-St Quentin (8-10 Oct.), Selle R. (17-25 Oct.), and Maubeuge (1-11 Nov.), 1918. After the war he received a parl. grant and a barony.

Horne, Richard Henry or Hengist (1803-1884), poet and critic, b. London. Educ. at Sandhurst, he became a midshipman in the Mexican Navy and served in the war against Spain. His first printed work was a poem, 'Hecatompylus,' which appeared in the *Athenaeum* in 1828. In 1837 he pub. 2 tragedies, *Cosmo de Medici* and *The Death of Marlowe*. From 1839 to 1846 he carried on a correspondence with Elizabeth Barrett, which was pub. in 1877. In 1843 he pub. *Orion*, an epic poem, at the price of a farthing. In the following year appeared the work by which he is best known, *The New Spirit of the Age*, a sort of sequel to Hazlitt's *Spirit of the Age*, and, like it, made up of critical studies of contemporary writers. H. lived in Australia from 1852 to 1869.

Horne Tooke, John, see **TOOKE**.

Horned Screamer, popular name of *Anhima cornuta*, a species of anseriform birds belonging to the family Anhimidae. It is found in certain parts of Central and South America, and has glossy black plumage with a white abdomen; its most remarkable feature is the long, slender, yellowish horn which adorns the head.

Horned Toad, popular name given to the species of *Ceratophrys*, a genus of amphibians, belonging to the order Anura and the family Cystignathidae. The name is derived from the triangular, upright, horny outgrowth above each eye. The head and mouth are huge, and the general appearance is toad-like. *C. cornuta* of N. Brazil is beautifully coloured, as also is *C. ornata*, a species found in Uruguay, Paraguay, and N. Argentina.

Horned Viper, popular name of *Cerastes cornuta*, a species of reptiles belonging to the family Viperidae. It is found in NE. Africa, and is remarkable for the possession of a large spiky scale above each eye. See **CERASTES**.

Hornell, city of Steuben co., New York, U.S.A., 70 m. SE. of Buffalo. It is an agric. centre, and has large car shops of the Erie Railroad. It manufs. textiles, clothing, furniture, and wood and metal products. Pop. 15,000.

Hornemann, Friedrich Konrad (1772-c. 1801), Ger. explorer in Africa, b. Hildesheim. In 1796 he was engaged by the African Association in London as an explorer, and in 1797-8 penetrated from Cairo through Fezzan to Murzuk, whence he returned across the Libyan Desert to Tripoli. From Tripoli he forwarded his journals to London, where they were pub. as *Travels from Cairo to Mourzouk*, 1802. From Tripoli he returned to Murzuk with the intention of penetrating to the Hausa country, but nothing further is known of him.

Horner, William G. (1786-1837), Brit. mathematician. He estab. a school at Bath, 1800, where he taught until his death. He was the inventor of H.'s method of solving numerical equations of all orders by continuous approximation, (see *Philosophical Transactions of the Royal Society of London*, 1819, pp. 308-35). A similar method was discovered, 1804, by Paolo Ruffini (1765-1822), neither being aware of the other nor of the Chinese method perfected by Chin Kin-shao, c. 1250.

Hornet, or *Vespa crabro*, hymenopterous insect belonging to the sub-order Apocrita and the family Vespidae. It is the largest of all Brit. wasps, measuring about 1 in. in length, and is not found N. of the Midlands; the predominant colour is red, with some yellow on head, abdomen, and wings. The colonies include not more than 200 individuals, and nest in hollow trees or other sheltered places. The H. is common all over Europe.

Horniman, Annie Elizabeth Fredericksa (1860-1937), theatrical producer, b. Forest Hill, London, and educ. privately and at the Slade School. She was a pioneer in modern dramatic production, her first essay in the dramatic world being in 1894 at the Avenue Theatre, London. She will be chiefly remembered for her work in founding the Abbey Theatre, Dublin, and in the reorganisation of the Gaiety Theatre, Manchester (opened under her management in 1908). She was the parent of the repertory movement in the theatre. In the U.S.A. the little theatre movement owes much to the visit of Miss H.'s Company in plays by Shaw, Galsworthy, Bennett, and Massingford. See P. P. Howe, *The Repertory Theatre*, 1910.

Horning, Letters of, term used in Scots law to signify a writ issued to compel a debtor to pay under the penalty of being considered a rebel. Originally these writs were very common and the only means of securing the desired end, but they have now fallen into disuse. Their name was derived from the practice of making 3 blasts with a horn to declare the man a rebel if he neglected to pay.

Hornpipe, musical instrument originally used in parts of England, made from an animal's horn. The name is now applied to a lively kind of dance which was used to accompany the music and which was originally as a general rule in 3-2 time but is now in common time. The best known dances of the kind at the present day are the college H. and the sailor's H.

Horns, weapons that occur on the heads of various animals. They differ in substance; the H. of the deer are made of bone and are processes of the frontal bone, while those of the giraffe are bony prominences covered with hair and are entirely separate from the bones of the skull at first, but afterwards join on to them. Those of sheep, oxen, and antelopes are developed from the frontal bones of the skull, and are covered by a corium and by a horny sheath; but the prong-horned antelope has H. which consist at

their basis of bony processes covered by hairy skin, and are covered by horny sheaths elsewhere. The H. of the rhinoceros alone are made of horn, and this occurs in fibres, growing from the skin like a mass of coarse bristles. H. are weapons of defence, and occur in both male and female animals, except in the case of antelopes, when they are generally confined to the male sex.

Hornsea, seaside tn in the E. Riding of Yorks, England, about 15 m. N.E. of Hull, with many holiday facilities. Near by is H. Mere, the largest freshwater lake in Yorks. Pop. 5380.

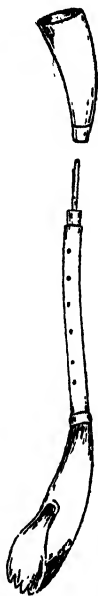
Hornsey, municipal bor. in the co. of Middx, England, and a suburb of N. London. The bor. comprises sev. old vils. and hamlets, including Highgate (q.v.). It returns 1 member to Parliament. Pop. 98,200. See also FINSBURY PARK.

Hornstone, variety of stone which resembles flint very closely. It is exceedingly brittle and splintery, and is sometimes identified with chert (q.v.).

Hornu, tn in the prov. of Hainaut, Belgium, 6 m. W. of Mons, engaged in coal mining and manufs. of shoddy, machinery, and ropes. It has copper-foundries and breweries. Pop. 10,900.

Hornung, Ernest William (1866-1921), novelist, b. Middlesborough, Yorks. Educ. at Uppingham, he lived in Australia for his health from 1884 to 1886 and later wrote 2 novels with an Australian background, *A Bride from the Bush*, 1890, and *The Boss of Taroomba*, 1894. Returning to England, he married a sister of Conan Doyle (q.v.) in 1893. In 1899 his well-known book *The Amateur Crackman* appeared, with its hero Raikes the gentleman-burglar making a sort of foil to his brother-in-law's detective Sherlock Holmes. Further collections of these adventures are *Raffles*, 1901, *A Thief in the Night*, 1905, and *Mr Justice Raffles*, 1909. During the First World War H. travelled in France with a mobile library for the use of the troops, and later wrote *Notes of a Co* on the Western Front, 1919.

Horology, the science that deals with the construction of instruments for telling the time. Time, however, differs from the other fundamental units with which physical measurements are concerned and



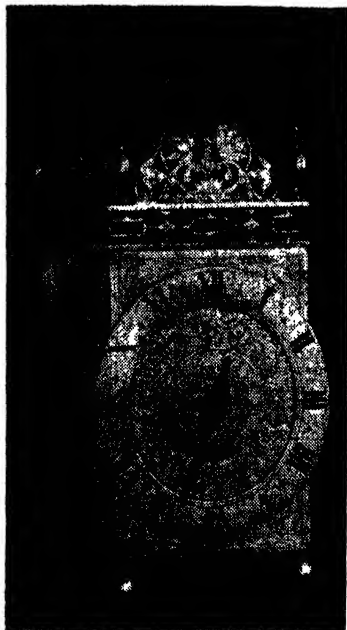
HORNPIPE OR
PIBCORN

The upper
horn is
raised to
reverse
the reed.
—From a
modern re-
production

which can be checked by direct comparison with accepted legal standards.

The usual instrument for measuring time is the clock; but there is no such thing as a standard clock which will record time indefinitely with such accuracy that it can be adopted as a master clock, to serve as a standard of time against which all other clocks can be checked. Since it is impossible to

sun, is that whereas the length of a sidereal day is to all intents constant, the length of solar days varies because the path of the earth in its ann. orbit round the sun is not a circle but an ellipse, and because it moves in a plane called the ecliptic which is inclined at an angle of about $23\frac{1}{2}$ degrees to the plane of the equator; also, while there is only one sun there are many stars, and consequently many observations can be made on a clear night. There is exactly one more sidereal day in a year than there are solar days, because the earth moves round the sun, but not round the stars. Thus at each successive transit of the sun the earth has moved some distance along its orbit, but with respect to the fixed stars, which are at an immense distance, it is in the same



Victoria and Albert Museum
AN ENGLISH CLOCK IN SILVER CASE
c. 1650. BY D. BOUQUET

make a perfect clock, astronomers rely upon the rotation of the earth on its axis to derive a standard of time, and the horologist is concerned with making instruments which will closely approximate to this standard.

The interval between 2 successive transits of the sun across a given meridian is defined as a *solar day*; and since all normal human activity is governed by the sun, which gives the alternation of day and night, the solar day has been adopted as the standard of time. Astronomers, however, prefer to use the fixed stars for their observations, and the interval between 2 successive transits of a selected star across a given meridian is defined as a *sidereal day*. The advantage of using a star for time determination, instead of the



Smith's English Clocks, Ltd.
A MODERN ELECTRIC CLOCK

The clock is finished in walnut and gilt, or padouk and bronze. It is also manufactured with an 8-day lever movement.

relative position. A sidereal day is shorter than a solar day by nearly 4 min.

Apparent Solar Time.—Apparent or real solar time is shown by a sundial properly oriented and set up. The disadvantage of the days varying in length is overcome by taking the *average* length of all the days in a year as a *mean solar day*. The difference between apparent and mean solar time is known as the *equation of time*. Apparent and mean solar time coincide only 4 times a year, at about 16 April, 14 June, 2 Sept., and 25 Dec. The extremes are at about 12 Feb., when the sundial is slow by mean time by 14 min. 21 sec., and 4 Nov., when the sundial is fast by 16 min. 22 sec.

While astronomers use sidereal time and sidereal clocks to divide the day into sidereal hrs, min., and sec., they convert it to mean solar time for all ordinary purposes.

Standard Time.—Since the earth makes a complete rotation in a day, it turns through an angle of 1 degree in 4 min. of time. Thus solar time is a local phenomenon, inasmuch as the sun transits the meridians of places on different longs. at different times. There would be utter

confusion if cities and towns in Britain each had their own local time. In actual fact it was the development of railways that first made the use of a standard time for the whole country necessary, and it was not until the passing of the Statutes (Definition of Time) Act in 1880 that Greenwich Mean Time became the standard for the whole country.

In 1884, by international agreement, the meridian of Greenwich was adopted as the zero, or prime, meridian of long., from which the longs. of all other places are measured. At the same time the world was divided into 24 time zones, each measuring 15° of long., with the effect that a small country like Britain comes within 1 zone, and consequently has one standard time. Large countries, like America and the U.S.S.R., cover a number of zones, with the time varying by 1 hr from zone to zone.

Early Methods of Time Measurement.—The first time indicators were shadow-casting objects—at first natural, and later set up for that specific purpose. This method of showing the passing of time was used by the Babylonians and Egyptians. In some instances such objects were meant to indicate one particular time only, and obelisks for the purpose of marking certain periods of the day, notably the time for worship, have been erected in many parts of the world. There is one such giant column at Materich near Cairo, erected about 3000 BC—a sister of Cleopatra's Needle on the Thames Embankment—which stood before the temple of the sun; and worship is supposed to have commenced when its shadow fell across the temple entrance. Anc. Britons are known to have erected pillars surrounded by a number of flat stones placed at intervals in a ring, so that the shadow cast fell on them each in succession. Here we have a crude form of dial, which shows that the original conception of the circular dial with its chapters dates right back to the earliest form of time measurement. Sir Norman Lockyer and other writers on the subject believe that the immense standing stones at Stonehenge were used in some way as a time indicator. Certain it is that at the summer solstice, in June, the sun rises immediately over the top of the stone known as the Hele Stone, or Friar's Heel, and shines direct on to the Altar Stone. Opinions vary, however, as to whether Stonehenge is really a complicated system of solar observation, or whether it is concerned merely with the ritual of the dead.

The present-day system of dividing a day into 24 hrs seems to have been used by early astronomers, but in ordinary life it was customary in practically all countries to divide the periods of daylight and of darkness into exactly the same number of what were called 'temporal' hrs, usually 12. The length of an hr of the day differed, therefore, from a night hr—except at the equinoxes when days and nights are of the same length—and both varied according to the season of the year. The div. of the hr into 60 min.,

each of 60 sec., can be traced to the anc. nations. The sec. was originally referred to as the 'second minute.' See also CHRONOGRAPH; CHRONOMETER; CLEPSYDRA; CLOCK; SAND GLASS; SHADOW CLOCK; SUNDIAL; WATCH; WICK AND LAMP TIME MEASURERS; and individual biographies. For bibliography see CLOCK.

Horopter, see VISION, DEFECTS OF.

Horoscope, term used in the phrase 'casting the horoscope' in astrology (q.v.), to denote the foretelling of a person's destiny in life from the positions of the heavenly bodies at his birth.

Horrocks, Jeremiah (c. 1617–41), astronomer. b. Toxteth Park, Liverpool. After studying at Cambridge, he returned to his native place and began his astronomical observations. In 1639 he was ordained curate at Hoole in Lancs, and there he made his observation—the first that ever was made—of the transit of Venus, which he had predicted (see VENUS). Among his writings are *Venus in Sole visa*, 1662, and *Jeremiae Horroccii Opera Posthuma*, pub. by the Royal Society. See J. E. Bailey, *Palatine Notebook*, 1882.

Horsa, see HENGIST AND Horsa.

Horse: History.—There is abundant evidence of the existence in Caesar's time of Brit. or Celtic ponies throughout the greater part of the Brit. Isles. Some of these breeds, notably the Shetland, have very little altered in the intervening period, and, except as a result of the introduction of Arabian or thoroughbred blood, show no tendency to increase their size. The large H. was probably unknown until the Norman invasion. Then animals of the Andalusian or Chestnut type were introduced, and from these and the large Belgian or Flem. H., the war H. ridden by knights in armour and later the modern heavy cart H., were evolved. Although the evidence of the oldest writings, sculptures, and frescoes goes to show that H.s were driven long before they were ridden the H. was probably employed and bred almost solely for war purposes for a long period. As far back, however, as the time, of Henry II the tournament was introduced and H. racing first captivated the Eng. people. But wars, civil and foreign, seriously depleted the H. supply, and in 1495 Henry VII forbade the export of any H. without royal permission, and of any mare whose value exceeded 6s. 8d. It was Henry VIII who made H. stealing a capital offence. In his reign, the weight of armour reached its maximum, and in consequence, large and strong H.s were in heavy demand. By this time the value of the H. in agriculture had been realised, and the pack H. was in extensive use for transporting goods. The use of state chariots by noblemen virtually originated the present road system and modern methods of travel. Coaches were introduced in the reign of Queen Elizabeth, and the importation of Arabs and other foreign stock laid the foundations of the modern race H. or Eng. thoroughbred. With the improvement of the roads, and

the use of coaches, carriages, and lighter vehicles, great attention was paid to the development of the harness H., and the Hackney or Norfolk Trotter was evolved from a foundation stock of Scandinavian H.s, and the Cleveland Bay and the Yorkshire coach H. were developed.

BREEDS.—With the development of the internal combustion engine H.s were gradually displaced from the roads and are now of decreasing importance even in agriculture. Most of the remaining H.s are pure-bred animals kept for pleasure or sport. The following are important distinct breeds: the Racehorse, or Thoroughbred, and the Hunter, the Hackney and Cleveland Bay, the Shire H., the Clydesdale, and the Suffolk Punch; while among ponies there are the Polo pony, the Hackney, the Welsh, the New Forest, the Highland, the Shetland, the Dartmoor, the Exmoor, the Dales, the Fell, and the Connemara.

The *Thoroughbred* has been produced by gradually improving the native breed. The present breed is particularly due to the introduction of 3 foreign H.s: the 'Byerly Turk,' 1689, the 'Darley Arabian,' and the 'Godolphin Barb,' 1724. While it owes much to the Arab all authorities agree that it would not benefit by further introduction of Arab blood. The majority of thoroughbreds are bay in colour, and their number appears on the increase. Chestnut is a fairly frequent colour, blacks and browns are rare, and grey thoroughbreds are practically extinct.

Hunters are bred from at least 1 thoroughbred parent, excellent animals for the purpose being produced by crosses with small Clydesdale or Suffolk mares. Irish hunters have long been considered the best here. A mahogany-brown colour is preferred, black, bay, or dark chestnut coming next in favour. Greys, roans, and light chestnuts are not fashionable. A hunter should be thick and strong on the back and loin, with long powerful quarters and muscular thighs and neatly-shaped and clean hocks. Size, stamina, action, and reliability at fences are essentials in a good hunter.

The *Hackney H.* is the beautiful harness H. of high action, arched neck and fast pace. A Hackney must be over 14 hands high, i.e. exceeding 56 in., but the average height is about 15.3 hands. Hackney-bred carriage H.s of 17 hands can be obtained. The distinguishing feature of the breed is its very high and free action. It is a powerfully built, short-legged, big, broad H., with an intelligent head, neat neck, strong level back, powerful loins, flat-boned legs, and good feet.

The *Cleveland Bay* is claimed as the oldest 'established' breed of Eng. H.s. It has an unrivalled reputation as an animal suitable for crossing with other breeds to produce H.s with stamina, substance, and action coupled with style, appearance, and good colour. It is commonly used in crossing to produce hunters, cavalry H.s, and harness H.s. The origin of the breed is obscure but it has certainly existed in Yorks for many

years. These bay to bay brown H.s stand 15.3 to 16 hands high, have a wide, deep body, long muscular loins, and long powerful quarters. The head tends to be large but is carried on a long lean neck. The legs are strong with a high-stepping action and they are free of superfluous hair.

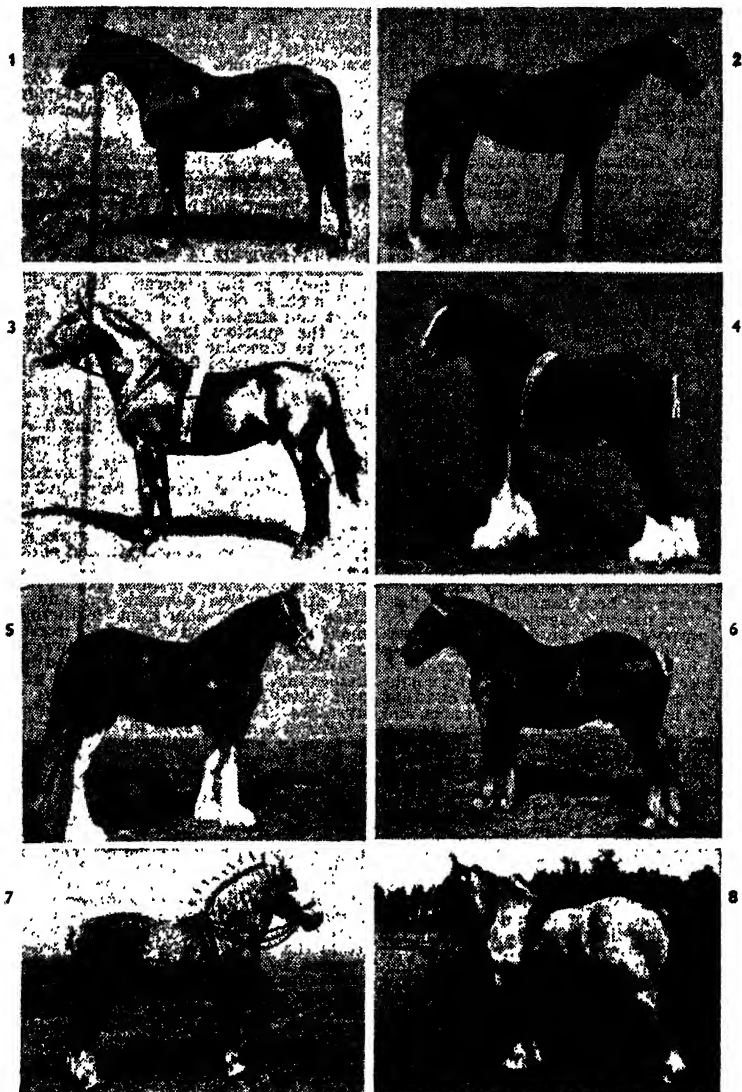
The *Shire* is the largest draught H. in the world, commonly attaining a height of 17 hands, weighing as much as 2000 lb. Though immensely strong, it is very docile and intelligent, and has a good free action. The prevailing colours are black, bay, and brown. The short stout legs have a plentiful covering of long hair known as 'feathering,' from the back of the knees and hocks to the pasterns. The neck is well arched, chest wide and full, back short and straight, ribs round and deep, and the quarters long, level, and well down to muscular thighs. The breed is directly descended from the great war H. of medieval times.

The *Clydesdale* is the agric. H. of Scotland. It is somewhat smaller than the Shire, but is claimed to be of finer finish. Bay and brown are the commonest colours, black and grey coming next, and, more rarely, chestnut and roan. The shoulder is more oblique than in the Shire, but the 'feathering' on the backs of the legs approaches the style of the latter. The breed is remarkably active in work, and is possessed of great strength and endurance.

The *Suffolk Punch* is quite distinct from the other native draught H., and its clean legs, or freedom from 'feathering,' make it specially well adapted for working on the land. The Suffolk is always a chestnut, varying from light sorrel to dark mahogany. It has long been kept pure, and always breeds true to colour. It averages 16 hands, and sometimes weighs as much as 2000 lb. The Suffolk is famous for its willingness to pull at a dead weight, and is an exceedingly active animal. It has a very finely arched neck, low shoulder, thick withers, and a deep round barrel-like build.

Foreign Horses.—The Arab is the most distinguished non-Brit. H. The earliest traces of it go back to the 6th cent. AD, and since then the breed has been constantly improved by rigorous selection. It has great powers of endurance, fine intelligence, and rare courage, as well as perfect shoulder action and a light mouth. It is the ideal cavalry H., and was in request by the Remount Dept of every war office in the world until the development of mechanised warfare. There are many Arab studs in Great Britain. Amongst other foreign breeds are the Percheron, the famous cart-horse breed of France (also bred in England), the Brabançon of Belgium, the Russian Orlov, the Prussian Trakehnen, the Jutland, and the Amer. Trotter.

Ponies.—With the exception of the Shetland, Brit. ponies owe much to Arabian and Thoroughbred blood. The pony breeder's object is to compress the most valuable qualities into the least



SOME BRITISH AND FOREIGN BREEDS

1, Thoroughbred; 2, Irish Hunter (*Farmer and Stock-breeder*); 3, Cleveland Bay (*Yorkshire Post*); 4, Shire; 5, Clydesdale; 6, Suffolk Punch (*Farmer and Stock-breeder*); 7, Percheron (*Sport and General*); 8, Brabançon (*Ten Hagen*)

compass, the aim being an animal with a small head, perfect shoulders and true action. Yet a pony must not only be a diminutive H.; it must have true pony character. The various breeds range from 14 hands, or even a little higher, down to 8 hands. The Shetland has been known sometimes to be no more than 26 in. high. Black, bay, and brown are the favourite colours. The Shetlands' sure-footedness, intelligence, and good nature make them ideal companions for children. The Highland pony is the largest and strongest of native ponies, and is unequalled for hardiness and staying power. The Welsh pony is somewhat similar to the Highland pony, but is a faster animal; in colour bays and browns are the usual shades. The New Forest pony is most commonly a fleabitten grey. Its height ranges from 12·2 to 13·2 hands. The Dartmoor and Exmoor ponies are other perfectly hardy breeds. The Dales and Fell ponies are natives of Cumberland and Westmorland, used by the farmers for all sorts of work. In colour they are usually black, brown, or bay. The Connemara pony, an Irish breed, supposed to be derived from Sp. crosses with native mares, is a big pony, and is much sought after for polo. A pony suitable for polo must have powerful riding shoulders, with strength across the loins, and muscular hind-quarters. It has to carry at top-speed weights considered ample for hunters of 15 hands and upwards. All descriptions of native breeds have been drawn on in creating the Polo pony, which should measure from 14 hands to 14 hands 2 in.

DISEASES.—Broken Wind or Heaves, sometimes results from influenza, bronchitis, or pneumonia, but more frequently from bad food, such as musty hay or corn, or from too much exertion after feeding. Broken-winded H.s. should have small nutritious meals of a laxative nature. Overloading of the stomach and constipation aggravate the condition. Azoturia occurs when animals are too well fed and have too little exercise. After a little work, the H. sweats profusely and the urine becomes blood coloured. Bog Spavin is a distention of the capsular ligament of the hock joint, and is commonest in cart H.s., especially young Clydesdales. A dressing of green tar and turning the animal out to grass may have a good effect. Bone Spavin is a bony enlargement on the lower part of the hock joint brought on by injury or over-exertion. Rest, blisters, and firing are recommended. Bots are the grubs of a gadfly. The eggs are laid in summer on the shoulders and forelegs, and are licked off and swallowed. A H. singeing lamp should be used to destroy the little yellow eggs. Broken Knees are of frequent occurrence. After washing and dressing with antiseptics, cold water bandages are applied. Calculi are stony accumulations occurring in the large intestine, and commonest in millers' H.s. They are often passed naturally, but strong purgatives must be avoided. Canker in the foot is a growth on the sole and frog, produced by

injuries or by dirty wet litter. Capped Hock or Elbow is a swelling due to a collection of fluid under the skin brought about by repeated bruising. Cataract is a pearly-white appearance of the crystalline lens of the eye, which must be carefully looked for in a possible purchase. There is no treatment. For Colic, or Gripes, 2 to 4 oz of laudanum with 3 oz of turpentine in a pint of linseed oil help the attack to pass off. In cases of Conjunctivitis bathe with tepid water to remove the irritant, and apply a boracic acid lotion. Corns generally occur in the fore-feet and are usually due to faulty shoeing. The shoes should be removed and a poultice of cold water and bran applied. Crib biting and wind sucking is often a bad habit, which, once formed, is incurable. Feeding on the ground, providing a muzzle, or substituting iron for wooden stable fittings may tend to lessen the vice. Curb is an enlargement of the back and lower part of the hock joint. Rest, cold water bandages to reduce the inflammation followed by blistering are beneficial. Polyuria is characterised by the passing of enormous quantities of urine and is due to mouldy hay and inferior foods. Farcy and Glanders are allied forms of a highly dangerous and contagious disease which is compulsorily notifiable to the police. With chronic glanders, a H. may go on working and feeding for months with a ragged unhealthy coat and a leaden hue to the membrane of the nostril as the only signs, but such an animal may be a general source of infection. All H.s. and ponies have to be tested with mallein before being put down a coal mine. Glanders has been eradicated from Britain by the slaughtering of reactors to the mallein test. Founder, or Laminitis, is an inflammation of the feet commonly seen in pet ponies which have been overfed. Unless given prompt veterinary treatment, foot deformity will result. Grease is an inflammation of the skin most commonly found on the hind legs of cart H.s. Wash with disinfectants, and dust with boracic acid, iodoform, and charcoal. Lock-jaw, or Tetanus, is frequently a fatal disease which may follow punctured wounds of the feet unless an injection of anti-tetanic serum is given. Mange is a parasitic disease which must be reported to the police. However, it no longer exists in Britain. Pneumonia, formerly so serious, now yields readily to modern veterinary treatment if this is not too long delayed. Roaring is a peculiar noise made in the act of inspiration, and is a characteristic of unsoundness. Operations sometimes effect a cure. Saddle galls are the result of badly-fitting harness. They should be washed with antiseptics and dressed with zinc and lead lotion. Sidebone, the ossification of one or both of the lateral cartilages at the sides and top of the hoof, is commonest in cart H.s., and is often caused by high-heeled shoes. H.s. with sidebone are unsound. The use of the bar shoe, and blistering may restore soundness. Strangles is an infectious disease commonest in young H.s. and

most frequently seen during the spring months. Abscesses are formed under the jaw, round the throat, and beneath the ears. With good nursing it often follows a mild course. A preventive serum is recommended. Strangles frequently terminates in roaring.

GLOSSARY.—A large vocabulary has attached itself to the nomenclature of H.s. The following is a glossary of terms in more general use: arm, or shoulder, the upper part of a fore-leg from just below the withers, to just above the elbow; bars of the mouth, the spaces between the canine teeth and the grinders; they occur at the angle of the lips and in them the bit is placed; bay, a nut-brown colour with black points; blaze, a stripe of white down a H.'s face; calf knee, a knee that bends sideways towards its fellow, knock-kneed; castors, chestnuts, or ergots, horny excrescences on the inside of each leg above the knees and below the hocks; chestnut, reddish-brown lighter than bay, but without black points or mane, and frequently with one or more white stockings; clicking, or forging, a defect in a H.'s paces when it knocks the feet against one another; it can usually be rectified by careful shoeing; cob, a compact short-legged H.; coffin bone, the bone in the centre of the hoof; coronet, the bony fringe round the top of the hoof; dappled, coat sprinkled with rings or spots of a darker colour; docking, shortening the tail; dun, a dull dark brown generally with black extremities and a black line down the back; elbow, the bony projection just below the junction of a H.'s foreleg and body; fetlock, a lock of short hair hanging from the back of the fetlock joint—the junction of the pastern and the shank or cannon bone; flank, the part of the H.'s side between the ribs and the hip; fleabitten, small red or dark spots on a white or grey coat, also used of a H. with spots on a dark ground; forearm, the part of the fore-leg between the knee and the junction of the leg with the body; frog, the protuberance in the centre of the bottom of the H.'s foot; gaskin, the part of a hind-leg between the hock and the junction of the leg with the body; a grey, the colour composed by a mixture of black and white hairs; hand, a measurement of height of 4 in.; haunches, the fleshy part at the junction of body and hips; hock, the backward bending joint on the hind leg; knee, the forward bending joint of the foreleg; mark (*infundibulum*), the hollow upon the top of a young H.'s teeth which by gradually wearing down serves as an indication of age; pastern, the bone joining hoof and fetlock joint; piebald, the colour which consists of patches of white and black; points, the extremities of the limbs; roan, a red or blue coat closely flecked with grey hairs; shoulder, the upper part of the foreleg from its junction with the body to the shoulder joint; skewbald, the colour consisting of patches of any 2 colours except white and black; snip, a small patch of white upon the nose; sorrel, the colour formed by yellowish or reddish-brown hairs; splint bones, small

bones running from hock or knee to fetlock; star, a square white patch upon the forehead; stifle, the joint at the junction of the hind-leg with the body; thigh, the upper part of the hind leg; white stocking, the white colouring of one or more legs of a dark or brightly coloured H.; withers, the highest point of the back just behind the neck. See also ARAB; BARB; FARRIER; and HORSE-RACING. See Sir W. H. Flower, *The Horse*, 1891; W. H. Wanklyn, *The Australasian Racehorse*, 1910; Lt.-Gen. Sir F. Fitzwygram, *Horses and Stables*, 5th ed. 1911; H. C. Merwin, *The Horse, his Breeding, Care, and Treatment in Health and Disease*, 1917; F. B. Loomis, *The Evolution of the Horse*, 1926; M. H. Hayes, *Stable Management and Exercise*, 1928; W. Fawcett *Thoroughbred and Hunter Breeding*, 1934; A. J. Lamb, *Story of the Horse*, 1938; Ministry of Agriculture, *Notes on Horse Breeding*, 1938; N. Watson, *The Book of the Horse*, 1947; M. Horace Hayes, *Veterinary Notes for Horse Owners* (first pub. 1877), 1948; Lady Wentworth, *The Authentic Arab Horse*, 1949; B. Vesey-Fitzgerald, *The Book of the Horse*, 1949; R. S. Summerhays, *The Observer's Book of Horses and Ponies*, 1953.

Horse, Master of the, see HOUSEHOLD, ROYAL.

Horse-chestnut, or *Aesculus hippocastanum*, well-known species of Hippo-



HORSE-CHESTNUT

castanaceae, commonly grown in Britain as an ornamental tree. It was introduced to England early in the 17th cent. from N. Greece and Albania. It has large leaves divided into 5 or 7 long, distinct leaflets, and the white flowers tinged with yellow or pink, are arranged in tall showy spikes; the fruit is a prickly capsule. It is not related to the sweet or Sp. chestnut.

Horse-fly, dipterous insect belonging to the family Tabanidae with bold patterned wings and a brown body. The H. is the largest Brit. blood-sucking fly but only the females feed in this manner. They are notorious worriers of horses and cattle.

Horse Guards, Whitehall, the H.Q. of the London Military Dist. (q.v.). Built in 1751-3 on the site of an old guard-house for Whitehall Palace, it formerly contained the offices of the depts under the commander-in-chief of the army (a rank abolished in 1904). The front of the building is always guarded by imposing sentries. At the rear is the H. G. Parade, where the ceremony of Trooping the Colour takes place on the sovereign's official birthday in June.

Horse Guards, Royal, raised in 1661 by the earl of Oxford. They wore blue clothing, hence the secondary title 'The Blues.' They fought at Sedgemoor, the Boyne, and Dettingen. In 1812 2 squadrons went to the Peninsula, and were present at Vittoria and the subsequent battles. The regiment distinguished itself at Waterloo. Though its duties had been associated with the sovereign for some time, it was not until 1827 that it acquired the full status of a Household Cavalry regiment already enjoyed by the Life Guards. It served again in the 1882 Egyptian campaign, and during the Nile campaign was employed as 'Camelry.' During the South African war (1899-1902) it was at the Relief of Kimberley and at Paardeberg. During the First World War it served in France and Flanders from Mons to the Sambre (1918). In the Second World War, as part of the Household Cavalry, it served in Syria, as an armoured car unit in North Africa and Italy, and in Europe as a reconnaissance unit of the Guards armoured div.

Horse Latitudes, belt of calms and light variable winds on the polar edges of the NE. and SE. Trades; commonly applied to the ill-defined tropical belts of high barometric pressure which encircle the globe at 30° N. and S.

Horse-mackerel, popular name of *Trachurus*, a genus of teleostean fishes belonging to the order Percomorphi and the family Carangidae. *T. trachurus*, the Brit. H., is common on our coasts, where the young are often found in large colonies sheltering under medusae. They have a compressed oblong body covered with small scales.

Horse-power, unit used to denote the power of steam and other engines. James Watt worked out the value of 1 h.p. after experiments with strong dray horses. Watt's result is in excess of the amount of work an average horse can compass. 1 h.p. = 33,000 ft. lb./min. = 746 W = 746 joules/sec. The Fr. cheval-vapeur = 4500 kilogram-metres/min. = 736 W, slightly less than the Eng. h.p.

The indicated h.p. (i.h.p.) of a reciprocating engine is given by the formula $\frac{2APRS}{33,000}$, where A = the area of the piston in sq. in., S = the length of the stroke in ft., P = the mean pressure on the piston in lb. per sq. in. (ascertained from the indicator), and R = the number of effective strokes per min., one for each revolution of the crank-shaft if the engine is single-acting, or two if double-acting.

This formula will not apply in the case of steam turbines, as a statement of the i.h.p. supplies the measure of force acting on the cylinder of an engine, but before the power available for doing external work off the crankshaft can be obtained, that required for driving the engine itself, must be subtracted. The result, when this has been done, is known as the actual, effective, or brake h.p. (b.h.p.) of the engine. For high-class condensing engines 80 per cent of the i.h.p., as shown by the dynamometer, or 85 per cent for non-condensing engines, may be taken as the b.h.p., or a little more in each case if the turbines are very large. If the turbines are directly coupled to electrical generators, as is often the case on land, the h.p. can be deduced from the electrical output. The power required to operate machinery can be exactly measured by connecting it to an electric motor, either as single units, or in groups driven from shafting. The h.p. of a boiler is an expression for the pressure and vol. of steam required to supply an engine of the same h.p. It is a question of the grate area and heating surface, or, in other words, the evaporative capacity to produce the required amount of steam. For convenience, boilers are often so classed, their h.p. under given conditions being stated by the manufacturers. See also METROLOGY.

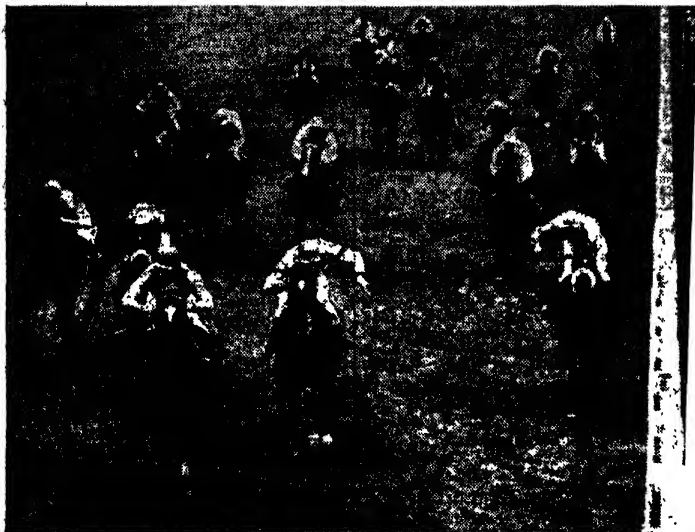
Horse-racing. The qualities of speed and endurance for which the horse has always been notable, irrespective of any conscious or artificial process of selection, would naturally suggest the inference that H. is a sport of some antiquity. Such is indeed the case, for classic writers record systematic H. at the Grecian Olympiads in 600 bc, while G. Grote, *History of Greece*, 1846-56, speaks of races for one-year-old colts. A tolerably full historical account of turf matters up to the middle of the 19th cent. will be found in J. Whyte's *History of the British Turf*, 1840, from which it seems that the earliest mention of race-horses (or 'running horses', as they were called) in Brit. national annals occurs in the writings of a 12th-cent. chronicler Wm of Malmesbury (q.v.) who states that in the 10th cent. Hugh Capet in soliciting the hand of Ethelswitha, King Aethelstan's sister, in marriage, sent over a present of Ger. 'ronning-horses'. It was not, however, till the reign of Henry II that horse-races began to be frequent. They were generally held at Smithfield, which at that time was the prin. horse-mrkt of England. The first race of which a description exists took place, possibly at Newmarket, between animals owned by Richard II and the earl of Arundel. But in the public-favour tournaments and jousts held the first esteem, and by the Tudor period, H. had ceased to be a great public amusement. The sport revived under James I, at which time Gartery in Yorks, Croydon, and Enfield Chase were the customary places for the best races. It was not till about 1640 that races took place at Newmarket, although James I built stables there near his

palace. In Lincoln (on Lincoln Heath) ann. racing began about 1680.

Generally speaking, it may be said that H. owes its position as pre-eminently the national pastime to the royal favour of the Stuart monarchs, especially Charles II. The earlier Hanoverian monarchs do not appear to have taken so kindly to the national sport; but if during that period H. was not the sport of kings, it became that of the princes of Wales. Prince George, afterwards George IV, owned race-horses in

as a popular H. place trace its hist. from 1711. But practically all the great ann. steeplechases, like the Grand National (q.v.) at Liverpool, and the Cheltenham Gold Cup, began long after the estab. of the great classic flat-race meetings.

Some occasional steeplechasing across country is traceable, according to the Badminton Racing-book, as far back as 1752, Ireland apparently being the home of its early popularity. The term 'steeplechasing' itself merely denotes the



Sport and General

THE FINISH OF THE 1957 DERBY, WON BY 'CREPELLO'

1784. The memory of the late King Edward VII, especially when prince of Wales, will long be cherished as a patron of H. Epsom, which from the fact of the 'Derby' being habitually run there, is probably the most popular racecourse in England, does not appear to have become an ancient estab. as the scene of H. till 1730, though races were held in the of James I. The Derby Stakes inaugurated at Epsom in 1780, but

ourably races where the stakes have always been pecuniarily much more valuable. The St Leger sweepstakes were instituted by a Col. St Leger in 1776, who lived near Doncaster in Moor. The 'Ladies Race' of the Oaks first took place in 1779. Ascot

fact that some convenient goal like a neighbouring church steeple was selected as a point in the race for the horses to mark in their cross-country run over ditches and hedges. (See also POINT TO POINT STEEPLECHASES.) Steeplechasing as a regulated sport is not recorded much earlier than about 1825, when plates were put up for prizes, and restrictions placed on the weights of the riders. The sport became increasingly popular some 10 years later, when the first Liverpool steeplechase was run round a 2-m. course near Aintree. For the first time the conditions of the race were so regulated as not only to secure for the spectators an uninterrupted view of the race, but to ensure fair play for all the competitors. After this, meetings were instituted at St Albans, Aylesbury, and other places, but Liverpool remained a

steepchasing centre and the Grand National there is still the prin. ann. steepchasing event. In 1866, as a result of the efforts of Lord Suffolk, Lord Coventry, the duke of Beaufort, and others in the interests of fair play, the National Hunt Committee was formed as the authoritative governing body over steepchasing, the Jockey Club declining to assume control over disputes unconnected with flat-racing. The recognised rules and regulations of steepchasing are to be found in the *Racing Calendar*, and *Steeple Chases Past*, pub. by Weatherby.

The Jockey Club is the governing body over all matters appertaining to flat-racing. Its first existence is variously assigned to the years 1750 and 1758. The first express mention of it, according to Dey's book on H., occurs in R. Heber's *Racing Calendar* for 1758, in connection with a regulation passed in that year directing all riders to pass the scales when they came in, under pain of dismissal. This, however, would seem to indicate that the club had by that time got into full working order, and the tradition of 1750, as the year of its foundation, is further confirmed by the fact that in 1752 a room on the site of the present club buildings was erected and leased to the duke of Ancaster and the marquis of Hastings in trust for 30 years as the place for general meetings of the aristocracy of the racing world during the Newmarket meetings. (See also the Badminton Racing-book.) The Jockey Club promulgates the rules of racing and amends them according to the needs of the racing world; it also regularly appoints stewards and defines their powers. The rules prescribe that the full programme of every meeting must be pub. in the *Racing Calendar*, with a statement of the names of 3 or more persons as stewards, and of the various other racing officials—the judge, clerk of the course, handicapper, stakeholder, clerk of the scales, and starter. The clerk of the course is solely responsible to the stewards for all general arrangements. The prin., or at all events the most essential, function of the clerk of the course is to draw up the programme of races with the object of attracting owners to enter and run their horses, and the public to come and watch the sport.

Hurdle-racing is also a popular form of race. In the early days of this kind of H. the hurdles were customarily about 5 ft in height and fixed very tightly in the ground; but the modern hurdle is not above 4 ft high, and is put loosely in the ground. The whole art of hurdle-racing is to take the hurdles smoothly and easily without a perceptible pause either at making the spring or at landing.

The prin. flat-racing events in England, the distances, are (1958): The Derby (1 m. 4 furlongs), 2000 Guineas (1 m.), 1000 Guineas (1 m.), Oaks (1½ m.), St Leger (1 m. 6 furlongs 139 yds), Lincolnshire Handicap (1 m.), Newmarket Stakes (1 m. 2 furlongs), Royal Hunt Cup (1 m.), Gold Cup, Ascot (2½ m.), Cesarewitch (2 m. 2 fur-

longs), Coronation Cup (1½ m.), Coventry Stakes (6 furlongs), King George and Queen Elizabeth Stakes (1½ m.), Nunthorpe Stakes (5 furlongs), Cheveley Park Stakes (6 furlongs), Cambridgeshire (9 furlongs), Dewhurst Stakes (7 furlongs), Champion Stakes (1 m. 2 furlongs), November Handicap (1½ m.), Middle Park Stakes (6 furlongs), Free Handicap (7 furlongs, for 3-year-olds), Free Handicap (1 m. 4 furlongs, for 4-year-olds), Goodwood Cup (2 m. 5 furlongs).

The season for flat-racing in England is between 24 Mar. and 22 Nov., or thereabouts. The rules provide for 2 races for each day's racing of 1 m. or upwards of the minimum aggregate distance of 2½ m. These races must differ at least 1 furlong in distance, neither must be open to 2-year-olds, and one of them shall be neither a handicap nor a race with selling conditions. It is not often, however, that a 2-m. course is run, though at Ascot the Gold Cup course is 2½ m., the Queen Alexandra Stakes course is 2 m. 6 furlongs 88 yds, while the Cesarewitch course at Newmarket is 2 m. 2 furlongs. The Derby course has been shortened 29 yds, owing to the rounding of Tattenham Corner, and is now 1 m. 4 furlongs exactly. The Derby and St Leger are restricted to horses of 3 years, both fillies and colts being eligible, and all the horses carry the same weight with the exception of fillies which have a sex allowance of 6 lb. in the Derby and 3 lb. (the normal allowance) in the St Leger. The Oaks is for fillies only. 'Weight-for-age' races are open to horses of varying ages, horses of equal age carrying equal weights. Horses of 3 years old give weight to those of 2 years old, 4-year-olds give weight to 3- and 2-year-olds, 5, 6, and older horses to 4, 3, and 2-year-olds, the scale varying according to the time of year. (A scale of Weights for Ages will be found in *Ruff's Guide to the Turf*.) The scale is pub. under the sanction of the stewards of the Jockey Club as a guide to clerks of courses, but is not intended to be imperative. The third kind of race is the handicap, which did not become a regular feature much before 1820. In handicaps the idea is to equalise the chances by apportioning to each horse the weight which, in the opinion of the official handicapper, will bring them together in a dead-heat. The rules provide for the due pub. of the conditions of any handicap and the date at which the entries close. The weights assigned are pub. in the *Racing Calendar*, and owners who do not agree with this handicap can out their further loss by declining to accept—in other words, by becoming non-starters. Even if a horse accepts, it doesn't necessarily mean that it will run.

The controversy over the forward and backward seat for jumping has resulted in a marked preference for the backward seat for steepchasing. The flat-racing seat has also undergone changes; the rider usually rides with short leathers, hunched forward on the horse's neck, with his weight on knees and stirrup-irons. With the old seat the jockey rode with longer

leathers, standing in the stirrups. The Amer. jockey, Tod Sloan, introduced the new seat into England.

Betting.—All contracts or agreements by way of gaming or wagering are null and void by the Gaming Act of 1845, and securities like cheques or bills of exchange given for money lost on wagers are void under an Act of 1711. (In the case of *Woolf v. Hamilton*, decided as late as 1898, it was held that H. had always come under the wagers contemplated by the Act of 1711.) Contributions or subscriptions or

installed on many racecourses, and portable totes are also used.

Before the Second World War, H. was becoming more popular all over Europe and America. The Chantilly and Longchamp races of France were as notable as many Eng. race-meetings, the chief races run there being the Derby, Oaks, and Grand Prix. The Fr. Derby is called the Prix du Jockey-Club, run over 1 m. 4 furlongs at Chantilly, and the Fr. Oaks, the Prix de Diane, run over 1 m. 2 furlongs 110 yds, also at Chantilly. In



Sport and General

THE 1958 GRAND NATIONAL

The winner, 'Mr. What,' leading from 'Goosander' at Beechers Brook

agreements to subscribe or contribute towards any plate prize or sum of money to be awarded to the winner of any lawful sport (including, of course, H.) are expressly excepted from the operation of the Gaming Act, 1845 (see also BETTING; CONTRACTS; GAMING; and GAMBLING). The business of bookmaking is only illegal if carried on in contravention of the Betting Act, 1853, which Act prohibits 'the keeping or using a house or other place' for betting purposes, and the whole question turns on the judicial construction of a place within the meaning of the Act. It has been held that Tattersall's enclosure is not such a place, that word apparently being construed *eiusdem generis* with house, office, or room. Betting is permitted with a bookmaker who acts as an agent for his client, and with whom accounts are settled weekly. The tote, a mechanical betting machine, is now

Germany many great meetings were annually held, and in Austria and Italy the sport was also developing. In Belgium there is a Jockey Club with H.Q. at Boisfort, while race-meetings were held at Antwerp, Ostend, Bruges, and Spa. H. was also making considerable strides in the E., particularly in India and Malaya. Foreign-owned horses are allowed to compete in Eng. races, but so far a similar privilege has not been extended to the horses of Eng. owners on some foreign courses. Eng. racehorses, however, are sought after by foreign buyers for breeding purposes. See *Ruff's Guide to the Turf*; H. S. J. Bourke, *Horse Training*, 1928; J. Hislop, *The Turf*, 1949.

U.S.A.—In what is now the U.S.A. H. in the beginning was largely confined to the S. states, whose settlers were chiefly Brit., and brought with them the habits and traditions of the home country.

When New York became a Brit. instead of a Dutch colony, H. was introduced there, and that state is still the locale of some of the best race-tracks in the country. Before the Civil war New Orleans was famous as a racing centre. Kentucky is pre-eminently the race-horse breeding state. The section near Lexington, known as the Bluegrass region, is filled with stud farms, and Kentucky horses are excelled by none. The best-known tracks are Belmont Park, Aqueduct, Empire City, and Jamaica near New York City, the one at Saratoga, New York, 4 near Baltimore, 4 near Chicago, Churchill Downs in Louisville, Kentucky, and Latonia in Kentucky, opposite Cincinnati. Most of the tracks in the U.S.A. differ from those in Great Britain, in that they are circular, and the turf has been removed, the roadway being made of dirt. In recent years the totalisator, known in the U.S.A. as the Parimutuel, has been installed in many race-tracks by state law, the state getting a percentage of the receipts, and bookmakers being barred.

Horse-radish (*Cochlearia Armoracia*), cultivated plant belonging to the family Cruciferae. The root has a strong pungent taste which closely resembles mustard, and is used either grated or made into a sauce, as a condiment with beef.

Horse-shoeing, see FARRIERY.

Horse-tails, see EQUISETUM.

Horsemanship, see RIDING.

Horsens, seaport in E. Jutland, Denmark, situated 25 m. SW. of Aarhus, on the H. fjord. It is an industrial centre, and has textile mills, iron works, tobacco factories, shipbuilding yards; dairy products are exported. Pop. 36,570.

Horsforth, tn in the W. Riding of Yorks, England, 5 m. NW. of Leeds. It is largely residential, acting as a dormitory tn for Leeds and Bradford. Pop. 13,950.

Horsham: 1. Mkt tn of Sussex, England, on the R. Arun, adjacent to St Leonards Forest and lying 18 m. NW. of Brighton, and about 36 m. SSW. of London. Among its buildings of interest are the Norman par. church, now restored, and Collyer's School. The chief industries are brewing, iron-founding, brick-making, and agric. and light engineering. Here also is situated Christ's Hospital (q.v.), which was moved from London. Pop. 17,000.

2. Tn on the Wimmera R. approximately 200 m. NW. of Melbourne, Australia, centre of the Wimmera dist., the largest wheat-growing area of Victoria. The tn has a very modern tn hall (seating 1000), 7 churches, base hospital, and a high school, and state school. The chief industries are flour milling, agric. implement foundry, textile machinery, and ladies' clothing manuf. Other primary products associated with the tn are wool, fruit, tomatoes. Pop. 6500.

Horsley, John Calcott (1817-1903), artist, b. Brompton, London. In 1856 he was elected an R.A., and from 1882 to 1897 he was treasurer of the Academy. His typical works are anecdotal subjects, e.g. 'Rent Day at Haddon Hall,' and

'Caught Napping.' He also painted a fresco in the House of Lords, 'The Spirit of Religion,' 1845.

Horsley, Samuel (1733-1806), prelate, b. London, and educ. at Westminster School and Cambridge. In 1759 he became rector of Newington, a living which he held till 1793. He devoted a great part of his time, however, to a controversy with J. Priestley (q.v.) on the doctrine of the divinity of Christ. Among his other preferments may be mentioned that of bishop of St Davids in 1788, Rochester in 1793, and St Asaph in 1802. He ed. the works of Sir Isaac Newton, 1785. See J. Priestley, *Tracts in Controversy with Horsley*, 1815; R. Hall, *Remarks on Horsley's Sermons*, 1819.

Horsley, Sir Victor Alexander Haden (1857-1916), surgeon and neurologist, b. Kensington, London. He studied medicine at Univ. College and qualified 1880. From 1884 to 1890 he was prof.-superintendent of the Brown Institution. In 1885 he was appointed to the surgical staff at Univ. College Hospital and was consulting surgeon at the time of his death. In 1886 he was appointed surgeon to the National Hospital for the Paralysed and Epileptic. He was prof. of pathology at Univ. College, 1887-96, and prof. of clinical surgery at the medical school, 1896-1906; in addition he was Fullerian prof. at the Royal Institution, 1891-3. His early work included research on prevention and treatment of rabies and he was secretary of the Royal Commission on Hydrophobia, 1886. He showed the relation of myxoedema to absence or insufficiency of the thyroid gland; his chief work in physiology was his investigation of the localisation of function in the brain and spinal cord. He was a pioneer of neurosurgery in Britain; in 1887 he performed the first successful removal of a tumour of the spinal cord, he devised an operation for trigeminal neuralgia, and made other important contributions to this subject. He was interested in medical politics, being president of the Medical Defence Union, a member of the General Medical Council, and one of the leaders of the Brit. Medical Association. He was a leader of the crusade against alcoholism. He was knighted in 1902. While serving as a consultant with the forces in Mesopotamia, H. d. of heat-stroke at Amarah. H. was a prolific writer; his works include *Experiments upon the Functions of the Cerebral Cortex*, 1885, *Brain Surgery*, 1887, *Hydrophobia and its Treatment*, 1888, *Structure and Functions of the Brain and Spinal Cord*, 1892, and (with Mary Sturge) *Alcohol and the Human Body*, 1907. See life by S. Paget, 1919.

Hort, Fenton John Anthony (1828-92), cleric, educ. at Rugby and Trinity College, Cambridge, a scholar of outstanding importance in N.T. studies, who laid the foundation of all modern study with the first really critical ed. of the Gk text since Erasmus. See B. F. Westcott and H., *The New Testament in the original Greek*, 1881.

H. felt the Assyrian tribute burdensome and thereafter sought for greater independence by alliance with Sawa, king of Egypt. The non-payment of his tribute brought Shalmaneser's forces against his cap, which was besieged for 3 years. Shalmaneser d. and was succeeded by Sargon who conquered H. and took him prisoner (2 Kings xv, xvii.).

Hosiery, term used to designate all textile fabrics which are manufactured on the looped-web principle and knitted goods, whether made by hand or machinery.

A knitted garment is intended to fit the body and to give readily to its movements,

Frame-work knitting was introduced by the Rev. W. Lee when he invented the stocking frame in 1589. This frame differed from the principles of hand-knitting in having a separate needle for each loop, instead of casting all the loops on to one needle. Each needle consists of a shank with a spring-pointed hook which can be pressed into a socket in the shank. The following diagrams are to show the formation of the knitted loop with this type of needle; all other machine parts have been omitted to give a clear view of the stitches and needle. Fig. 1 shows the new rows of loops being formed

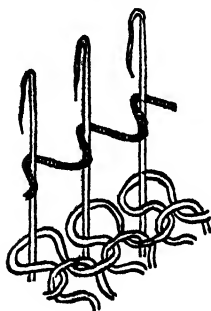


FIG. 1

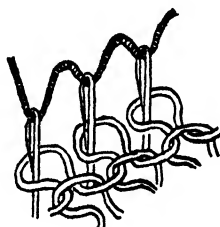


FIG. 2

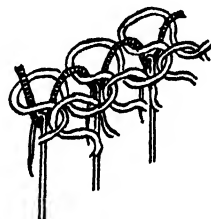


FIG. 3

and (in the case of underwear) to absorb perspiration, so that yarns used for the making of such garments are given very little twist, i.e. are soft-spun. Wool, cotton, silk, rayon, nylon, terylene, and orlon, as well as certain goat hairs, are all used in the knitting branch of the textile industry. Wool, silk, nylon, terylene, and orlon are very resilient materials, and garments made from these materials keep their shape; cotton and rayon are not very resilient, and garments made from them tend to sag after a period of wear. Cotton is a particularly tough fibre and the best material for washing. Nylon, even when made into the sheerest of yarns, is sufficiently strong to stand the strain of knitting and to give satisfactory service in wear. When nylon or terylene is mixed with wool their strength and power of resistance to abrasion are improved, and a garment made from these mixtures, though less absorbent, dries more quickly than one made from all-wool yarns. Silk is exceedingly soft, strong, and lustrous, but is gradually being replaced by the various man-made fibres. The goat hairs cashmere and vicuna are used in the making of high-class goods; garments made from them are smoother and softer than those made from fine wool, but are also more expensive.

whilst the fabric is held lower down the needle. In Fig. 2, the needles have been lowered to allow the loop into the hook of the needle. The hook has been closed and is still descending into the loop of the previous row of stitches. Fig. 3 shows the old loops rising above the needles and descending on the new loops which are still held in the hook of the needle. Fig. 4 shows the needles rising to their original position with the new row of loops sliding down the shank of the needle.

The first fabric made by Lee was a flat piece, with selvedge on both sides from which the garment had to be cut to shape and sewn up, but he soon learned to fashion by transferring loops at the edges, inwards to narrow and outwards to widen. In Lee's machine the thread had to be placed over the needle by hand and it was not until 1857 that Luke Barton invented the first successful machine fitted with self-acting mechanism for fashioning known as the straight-bar rotary frame.

Warp knitting varies from frame-work knitting in having a separate thread for each needle instead of the same thread for the whole row. By the invention of the Dawson wheel (1791) the threads can be laid in any direction, thus giving greater scope for variety of design in patterns and colour which makes this form of

knitting specially suitable for household fabrics.

Circular knitting was made possible by a machine patented by Sir Marc I. Brunel in 1816, which he called the *tricoteur*. This produced a tubular web but did not come much into use till improved upon by Peter Claussen of Brussels in 1844. The production of the latch needle by Townsend in 1858 helped the production of cheaper circular fabrics. The seamless stocking (as made on the circular machine) is woven in strong formation, i.e. in endless succession, whereas on a fashioned knitting-machine each hose is made and cast off.

Rib work was the first variation of the plain fabric produced in Lee's machine, and was produced by an invention of Jedediah Strutt in 1758, by which a second set of needles, placed at right angles to the first, drew their loops to one side, while the first set of needles drew theirs to the other side of the frame. Lee's frame had only 16 needles for 3 in. whereas modern machines have as many

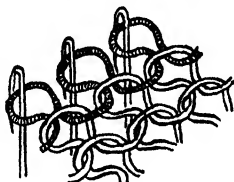


FIG. 4

as 120 needles for 3 in. Some of the most modern knitting frames work at a great speed. One with 30 divs. of 476 needles each has in all 14,280 needles; each of these forms loops at the rate of 80 a min. so that 1,142,400 loops can be formed in a min. (the speed of an expert hand knitter is 100 loops per min.).

Rib knit. Rib knit is not only more ornamental than the plain knit but also more elastic and will draw in the garment where it is applied. Many garments are made on the *weft knit* principle, using both the plain and the rib knit. Underwear generally has a plain knit body because this is smoother than rib knit, but rib knit is usually applied at the end of the body and the sleeves. The legs of men's half hose are usually ribbed to form a pattern (e.g. in 4 and 1 rib), but for the top a rib of 1 and 1 is invariably employed because this contracts the hose to give a better grip than any other rib effect. *See also* KNITTING.

Plating. In plating, 2 yarns of different materials are knitted side by side, one yarn in front of the other. By this means a garment is given properties which cannot be provided by 1 yarn alone. For example, a garment of wool and cotton can give the warmth associated with wool and the smoothness of cotton next to the skin if it is knitted so that wool forms the outside and cotton the inside. Any 2 materials can be used in this way.

See A. W. Eley, *Stockings: Silk, Cotton, Rayon, Nylon*, 1946; S. G. Mason, *British Hosiery and Knitwear*, 1947.

Hosmer, Harriet (1830-1908), Amer. sculptor, native of Watertown, Massachusetts, U.S.A. She studied under Gibson in Rome. Her animated and original statue of 'Puck' was a great success. Her other best works are: 'Zenobia in Chains,' 'Beatrice Cenci,' 'A Sleeping Fawn,' and 'A Waking Fawn.' Certain technical processes of the art of sculpture are of her invention.

Hospice (Lat. *hospitium*, entertainment), name given to the homes of rest provided as a shelter for travellers passing over the Alps by the various monastic orders. The most famous H.s are those on the Great St Bernard, founded 962, on the St Gotthard, dating from the 13th cent., on the Mt Conis, the Simplon, and the Little St Bernard (*see* CEVIN, MONT; ST BERNARD; ST GOTTHARD; SIMPLON PASS).

Hospital, an institution for the temporary reception of the sick. The word H. is derived from the Lat. adjective *hospitalis*, which belongs to the noun *hospes* (genitive *hospitis*) meaning host or guest. Hotel and hostel have a similar derivation, but like H. these terms have become limited and specialised in their application.

Classification.—H.s are teaching or non-teaching, according to whether or not they have attached to them medical schools where students receive technical instruction by properly qualified lecturers and demonstrators. According to another classification they are divided into general and special H.s. A general H., as its name implies, is designed to treat all kinds of patients and should therefore be equipped with every appliance, both for medicine and surgery. Particular classes of patients or patients suffering from infectious diseases, such as fever or small-pox, or from diseases of a particular organ, such as eye, ear, nose, and throat, or from maladies like cancer, are treated in special H.s. The following is a list of the main classes of H.s with examples from London, and elsewhere when stated:

I. GENERAL HOSPITALS.—(a) *Teaching*: St Bartholomew's H. (founded 1123), St Thomas's H. (1207), Westminster H. (1719), Guy's H. (1724), St George's H. (1733), London H. (1740), Charing Cross H. (1818), Royal Free H. (1828), Univ. College H. (1833), Middlesex H. (1835), St Mary's H. (1852), King's College H. (1839). (b) *Non-teaching*: Metropolitan H. (1836), London Homoeopathic H. (1849), Royal Northern H. (1856).

II. SPECIAL HOSPITALS.—1. *For special classes of persons*: (a) *Children's hospitals*: H. for Sick Children ('Great Ormond Street') (1852), Victoria H. for Children (1866), Alexandra H. for Children with Hip Disease (1867). (b) *Hospital for women and children*: Royal Waterloo H. (1816). (c) *Maternity and lying-in hospitals*: City of London Maternity H. (1750), Queen Charlotte's Maternity H. (1752). (d) *Hospitals for foreigners*:

Ger. H. (1845), Fr. H. (1867). 2. *For infectious diseases*: Park H., Hither Green, London (1897), Joyce Green H., Kent (1903). 3. *Hospitals for tuberculosis and diseases of the chest*: Brompton H. (1841), Royal National H., Isle of Wight (1867). 4. *For diseases of particular organs*: (a) *Dental hospital*: Royal Dental H. of London (1858). (b) *Ophthalmic hospital*: Royal London Ophthalmic H. ('Moorfields') (1804). (c) *Throat, nose, and ear hospital*: Royal National Throat,

some form or other of out-patient treatment. Three events are of particular importance in the hist. of H.s. Firstly, the discovery of anaesthetics (1846) made possible major surgical operations; secondly Lister's introduction of antiseptic methods in surgery about 1865 revolutionised surgical technique and the operating theatre, paving the way for modern asepsis; thirdly the improvement in the standards of nursing as a result of Florence Nightingale's pioneer efforts



Fox Photos

AN OPERATION IN PROGRESS IN A HOSPITAL

Nose, and Ear H. (1863). (d) *Rectum*: St Mark's H. (1835). 5. *For special maladies*: (a) *Cancer*: Royal Marsden H. (1851). (b) *Nervous diseases*: National H., Queen Square (Albany Memorial) (1859). (c) *Skin diseases*: St John's H. (1863). (d) *Deformities*: Royal National Orthopaedic H. (1839). (e) *Incurables*: Royal H. for Incurables, Putney (1895). (Many great London and prov. H.s. were seriously damaged by the Ger. air-raids in 1940-4.)

History.—Until the 18th cent. very little provision was made for the treatment of the sick. As late as 1710 St Bartholomew's and St Thomas's H.s. were the only general H.s. in London, and the provs. were equally ill-provided. But since then, and especially in the last century rapid strides have been made and the H. is an indispensable factor to-day in all tics of any size. During the 19th cent. many dispensaries also sprang up, giving

during the Crimean war and later in her nursing school at St Thomas's H.

H.s. existed in ancient Egypt, where invalids slept in the shadow of their temples, 4000 BC, in the hope that the gods would make them well. The temple of Aesculapius at Cos was frequented by Gk sufferers, and in the E. it is known that the Indian emperor Asoka founded a H. at Surat (c. 260 BC), and that Haroun-al-Raschid (d. AD 809) built many asylums at Bagdad. Of innumerable H.s. for various purposes estab. during the later medieval period was the *Pandit-orator* at Constantinople. Its regulations have survived, and prove it to have been far in advance of the time. They give directions for the disinfecting of clothes when a patient was admitted, and for the use of bedding and shirts. We learn, too, that the doctors specialised as 'pathologists,' surgeons, etc.; and even that there

were women doctors for childbirth. The various depts included a pharmacy, a bursary, and an almonry.

Prior to 1948 there were 2 distinct types of H. in Britain, which had evolved from quite different roots—the *voluntary* and the *municipal* H.s.

Voluntary Hospitals.—Many of these, in Britain and elsewhere, date back to institutions founded in the Middle Ages by the monastic orders. When the monasteries were dissolved during the reign of Henry VIII most of the monastic

the reign of Elizabeth I. These poor law institutions and workhouses cared for those without money or means. In 1930 responsibility for their administration passed from the Poor Law Boards of Guardians to the co. and co. bor. councils, who were given power, if they wished, to take over workhouse wards for the sick and run them as H.s for all classes. Many were subsequently so improved that they began to rival the voluntary H.s in the neighbourhood. These new municipal H.s usually had full-time



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WESTMINSTER HOSPITAL, LONDON

foundations d. out. The great period of the foundation of the voluntary H.s was in the 18th and 19th cents., and most of the large London and prov. H.s were founded between 1720 and 1870. The voluntary H.s were charitable institutions for the sick poor, founded and endowed by local citizens and having for their medical staffs men who gave their services free. As time went on a system grew up whereby people paid the H. what they could afford for their medical care, but they did not pay the specialists, who had to rely on a sufficiently large private practice in the neighbourhood in order to earn an income. In 1909 almoners were appointed in some H.s to assess the amount which a patient could afford.

Municipal Hospitals.—These grew up haphazardly from quite a different root, i.e. the poor law H.s which derive from the poor law relief system estab. during

salaried medical staffs; about 60 per cent of beds in the country were in the municipal H.s.

Administration.—As mentioned above, H.s in the Brit. Isles were, until the operation of the National Health Service Act in 1948, either supported by voluntary contributions or by municipal authorities. On the Continent and in the U.S.A. they are still for the most part the responsibility of the municipalities. Sir Wm Fergusson's Commission on Hospital Abuse (1871) made recommendations which are here quoted as indicating deficiencies previously existing in our H. system: (1) to improve the administration of poor-law relief; (2) to give the poor-law authorities control of all free dispensaries; (3) to check the unrestricted system of free relief; and (4) to pay the medical staff. The rapid growth in the number of H.s emphasised many problems, both

financial and administrative, and in order to meet them the following recommendations were made by the Medical Consultative Council in 1920 and pub. in their report. They originated with a scheme of combined medical services systematised to serve a given area, and are remarkable in the great advance shown as to the place of H. service in the state. The scheme was discussed in 1927 by the Brit. H. Association.

1. Domiciliary, including curative and preventive treatment. Staff: doctors, pharmacists, nurses, midwives, health visitors, and other officers of the Health authority.

2. Primary Health Centres, including medical, surgical and maternity beds, out-patient clinics, dental clinics, accommodation for equipment needed for treatment and investigation, accommodation for the work of communal services, ambulance service. Staff: general practitioners, visiting consultants and specialists, officers engaged in communal services, visiting dental surgeons, workers in ancillary services.

3. Secondary Health Centres, including facilities in curative services in cases requiring highly specialised diagnosis or treatment. Staff: consultants and specialists, officers of communal services, dental surgeons, workers in ancillary services.

4. Supplementary services, including facilities for specialised treatment of such conditions as tuberculosis, mental disease, etc. Staff: appropriate specialists and workers in ancillary services.

5. Teaching H.s and medical schools for cases of unusual difficulty; including facilities for research and post-graduate study. Staff: consultants, teaching and research staff, workers in ancillary services.

6. Research: clinical records.

7. Administration: The estab. of a single Health authority to supervise local administration whether curative or preventive. Representation of the medical profession on each authority and the estab. of Local Medical Advisory Boards.

A further step forward was indicated by Mr Neville Chamberlain as Minister of Health in 1927 whereby by special legislation Poor Law H.s were to be transferred to the co. and co. bor. councils. This measure had the very important results of removing the stigma of penury from Poor Law patients and allowing all classes to become eligible for institutional benefit.

The prohibitive charges of most private nursing homes led some H.s to conduct depts for private patients with fees within the means of the middle and lower middle classes.

In 1943 a detailed survey of H. services in Britain was undertaken by experts, some from the Ministry of Health and others sponsored by the Nuffield Foundation; much of the subsequent H. planning has been based on their findings.

Voluntary Hospitals under the National Health Service Act, 1946.—This Act introduced drastic changes in the system of

voluntary and municipal H.s; for in effect it nationalised the existing H.s and such future H.s as may be required. The Act imposes on the minister of Health the duty to provide throughout the U.K. such H.s and specialist and nursing services as may meet all reasonable requirements. The former honorary staff are paid for their services. Special accommodation may be provided for private patients who undertake to pay the prescribed charges, which are designed to cover the whole cost of the accommodation and services provided for the patient at the H., including an appropriate amount in respect of overhead expenses. In addition to these 'pay beds,' single rooms or small wards are available without charge for those needing them on medical grounds. Many H.s also have 'amenity beds' in single rooms or small wards where patients, who desire privacy which is not considered necessary on medical grounds, may be accommodated for a modest charge; in other respects such patients are treated similarly to those in general wards and no charge is made for treatment or normal maintenance. Included in the H. and consultant services are all forms of general and specialist H. care and treatment, both in-patient and out-patient. Specialist opinions and treatment of all kinds are available at H.s (as well of course at clinics, institutions, health centres, etc.). For this national service the minister of health has taken over both voluntary and public H.s. Supplementary services, such as midwifery, maternity and child welfare are provided through the local authorities. In introducing this Bill, the minister of health, Mr Aneurin Bevan, admitted that the voluntary H.s had done valuable work, but he believed that 'it was repugnant to a civilised community for hospitals to have to rely on private charity.' The gov. rejected the idea that local authorities should take over the H.s and considered that the only thing to do was to create an entirely new H. service, to take over voluntary H.s and local gov. H.s and to organise them as a single H. service throughout the country, with the nation itself carrying the expenditure. In the early years the gov. estimated the cost at £152,000,000, the net ann. additional exchequer expenditure being placed at £95,000,000, after allowing for a contribution of £32,000,000 from the National Insurance Fund. Regional Boards administer the H.s and specialist services in about a score of regions, each large H. or related group of H.s having a management committee. Except in the case of voluntary teaching H.s, endowments have passed to a fund called 'the Hospital Endowments Fund,' administered by the minister of health, the cap. value of the fund being apportioned among the regional boards and the income from each portion passing to the board.

The Act provides that where any voluntary H. is designated as a teaching H. or is one of a group so designated, all the H. endowments are transferred to a Board of Governors constituted in the manner

provided in the Act. Endowments given after the passing of the Act (6 Nov. 1946) but before the appointed day (5 July 1948), upon trusts which provide for the application of the property for some specific object distinct from the general purposes of the H. and for administration as a distinct cap. fund, are not transferred to the H. Endowments Fund but to the H. management committee constituted under the provisions of the Act for the H. or group of H.s in which it is comprised.

Research.—Much clinical research is carried out in H.s under powers conferred on H. authorities under the National Health Service Act of 1946. In 1953 a Clinical Research Board was appointed by the Medical Research Council, in consultation with the health depts. to advise and assist the Council in promoting and co-ordinating clinical research, particularly major research schemes undertaken in H.s.

Voluntary Work.—There is still much scope for the voluntary worker in the H. Not only do members of boards and committees work voluntarily but many members of voluntary organisations visit patients, run trolley library services, canteens, linen guilds, etc.

At the end of 1954 there were 2,681 H.s in the National Health Service in England and Wales, providing 510,000 beds and costing £286,000,000 to maintain. See NATIONAL HEALTH SERVICE ACT.

In U.S.A.—The H. development in the U.S.A. is probably not only the most extensive of any country in the world, but, on the whole, the finest. To begin with, unlike the case of most of the H.s which serve the people of London, those in the larger-sized tns and cities of the U.S.A. have not for so long depended upon voluntary gifts. Each municipality and many of the cos. maintain their own H.s whose budget comes from the taxes imposed upon the public. There is thus ensured to the H.s a steady and regular income and the ability to hire a regular trained staff of physicians and nurses and attendants. It is estimated that about 60 per cent of the cos. in the U.S.A. have their own H.s. An even larger percentage of the bigger tns have one or more public H.s. The smaller tns have often built H.s in the pretty colonial style of architecture, and surrounded by parks or gardens, to take the patients as much as possible away from the city noises. In the big cities the tendency is to erect skyscraper H.s. Thus the Jefferson H. in Philadelphia is 17 stories high. In Chicago St Luke's is 19 stories high. But probably the biggest H. group in the world is that of New York City. It extends from Riverside Drive to Broadway and from 165th Street to 168th Street, the total site covering 22 ac. Here are the Presbyterian H., the College of Physicians and Surgeons of Columbia Univ., the Sloan H. for Women, the New York State Psychiatric Institute and H., the Babies H., the Squire Urological Institute, the Presbyterian H. School of Nursing, the Neurological Institute and H., the Harkness Patients' Pavilion, the School

of Oral and Dental Surgery, the Vanderbilt Clinic and the Lamar Institute of Public Health. This vast H. colony has 1674 beds. See Sir H. Burdett, *Hospitals and Asylums of the World*, 1893; R. W. Chalmers, *Hospitals and the State*, 1927; B. G. Bannington, *English Public Health Administration*, 1929; A. G. L. Ives, *British Hospitals*, 1948; A. C. Bachmeyer and G. Hartman, *The Hospital in Modern Society*, 1949; A. G. Aldis, *Hospital Planning Requirements*, 1954; Nuffield Trust, *Studies in the Functions and Design of Hospitals*, 1955. The ann. *Hospitals Yearbook* gives a list of all H.s in the Brit. Isles, with information on administration and ancillary services.

Hospital Fund for London, King Edward's, estab. in 1897 by King Edward VII (when Prince of Wales) for the 'support, benefit and extension' of the hospitals of London, and incorporated by Act of Parliament in 1907. The fund is fortunate in having substantial capital resources, amounting to over £7 million, the income of which is used for a wide variety of purposes connected with the hospitals of London. Legacies have played an important part in the fund's finances and are still a major source of revenue. Freed from the pressure to concentrate on meeting the maintenance needs of the voluntary hospitals, the fund has since the nationalisation of the hospitals in 1948 been able both to make numerous grants to hospitals for special purposes not covered by the National Health Service, and to develop its work in many directions, such as the estab. of training colleges for hospital administrators, matrons, ward sisters, and caterers. Its H.Q. are at 10 Old Jewry, London, E.C.2.

Hospitaliers, Knights (O.F. *hospitalier*, from Lat. *hospes*, a guest). There have been sev. institutions whose members were popularly known as H., but by far the most celebrated are the Knights of St John of Jerusalem, known also at various dates as Knights of Rhodes and Knights of Malta. They were founded at Jerusalem c. 1070 to help Christian pilgrims to the Holy Land, and were bound by religious vows. After the fall of Jerusalem in 1290 the order went first to Limasol, and then made its H.Q. at Rhodes in 1310. When the Templars (q.v.) were suppressed in 1312 the pope transferred most of their possessions to the hospitaliers, who were driven from Rhodes by the Turks in 1522. After a brief sojourn in Crete and Sicily they transferred their prin. seat to Malta at the invitation of Charles V in 1530, and remained there until 1798, when the order became a charitable religious institution, its H.Q. being estab. at Rome in 1878. The Eng. order of St John of Jerusalem, with H.Q. at Clerkenwell in London, ascribes its origin to the hospitaliers. It is, however, a purely secular and philanthropic institution, incorporated by charter in 1888, and admitting women to membership. It organises hospital and Red Cross work (see AMBULANCE;

RED CROSS), and its distinctions are awarded for services in the cause of humanity throughout the Brit. Commonwealth and Empire. See F. Woodhouse, *Military Religious Orders of the Middle Ages*, 1879; F. J. King, *Knights Hospitallers in the Holy Land*, 1931.

Hospodar (Russian *Gospodar*), Slavonic term meaning 'lord,' 'master,' is the title which is specially applied to the head of a family or the master of a house. It was a title of the rulers of Wallachia and Moldavia from the 15th cent. to 1866, when Rumania became independent. The title was also used by the grand-dukes of Lithuania and the kings of Poland down to John Sobieski.

Host (Lat. *hostia*, a victim), Christ's body and blood as sacrificially present in the Holy Eucharist, applied more particularly to the species of bread. (See TRANSUBSTANTIATION). The celebrant in the W. rite breaks the H. into 2 pieces, one of which is again broken over the chalice. In the Oriental rite the H. is mixed with the wine before being given to the communicant in a spoon. The ceremony of the 'Elevation of the Host' at the consecration dates from the 12th cent.

Hosta (synonym *Funkia*), the plantain lily, family Liliaceae, a genus of herbaceous perennials, natives of E. Asia, hardy in Britain. *H. fortunei*, *H. lancifolia*, and *H. plantaginacea* are grown for foliage and flower beauty.

Hoste, Sir William (1780-1828), naval officer, b. Ingoldisthorpe, Norfolk. He saw service in all parts of the Mediterranean, and in 1811 he defeated Dubourdieu in a fight off Lissa, and ultimately took Cattaro and Ragusa. He was a brilliant commander, and was a favourite of Nelson. See Lady Harriet Hoste, *Memoirs and Letters of Sir W. Hoste*, 1833.

Hot Lake, dist. in the North Is. of New Zealand, stretching SW. from the bay of Plenty, and containing hot springs, geysers, and active volcanoes. See ROTORUA.

Hot Springs, city and the co. seat of Garland co., Arkansas, U.S.A., in the Ozark Hills, 45 m. WSW. of Little Rock. It is situated in a narrow valley and contains about 44 mineral springs which are famous as cures for chronic diseases such as rheumatism, gout, and neuralgia. Their temp. ranges from 76° to 160° F., and the daily output is about 1,000,000 gallons. They are all contained in a reservation which has been held since 1832 by the U.S.A. Gov., which maintains an army-navy hospital. Here was held the U.N. Conference on Food and Agriculture in May 1943, as a result of which an interim commission was estab., which formulated the constitution of the Food and Agriculture Organisation (F.A.O.) of the U.N. (see further under FOOD AND AGRICULTURE ORGANISATION). Pop. 39,800.

Hotchkiss Gun, gun introduced into use in the Brit. Army during the First World War. It was for some years used by cavalry, pack artillery, and tanks, being

shaped for carrying in a bucket.' The gun is fed by a continuous metallic strip, and the method of locking the breech is peculiar to this type of gun, embodying, as it does, the 'interrupted thread' principle. Cooling is effected by the use of a thick barrel with few, but large, radiating rings. The weight of the H. G. is 31 lb. or, without mounting, 27 lb. It automatically fires 400 rounds a min. and is made in light and heavy forms. It was named after its Amer. inventor, Benjamin Berkeley Hotchkiss (1826-85), an employee in a gun factory during the Amer. Civil war. The H. G. is still used in some Brit. tanks. Variants are used in the Fr. and Sp. armies.

Hotchpot. The object of the H. clause, which is inserted by conveyancers in all marriage settlements, is to ensure that none of the younger children of the marriage who have been advanced a sum out of the portions fund during their father's lifetime shall be able to claim a further share at his death in the sum remaining for div. among all the younger children without first bringing into account the sum or sums advanced. Power is usually expressly given in the settlement to the tenant for life under the Settled Land Acts to declare on making an advance, or 'appointment' as it is termed, that the share appointed shall not be brought into H., which power is of use where it is the wish of the tenant for life to divide the fund equally subject to a first charge in favour of a particular child. Where residuary estate is by the terms of a will to be divided between the children of the testator and a stranger, advancements do not have to be brought into H. so as to benefit the stranger.

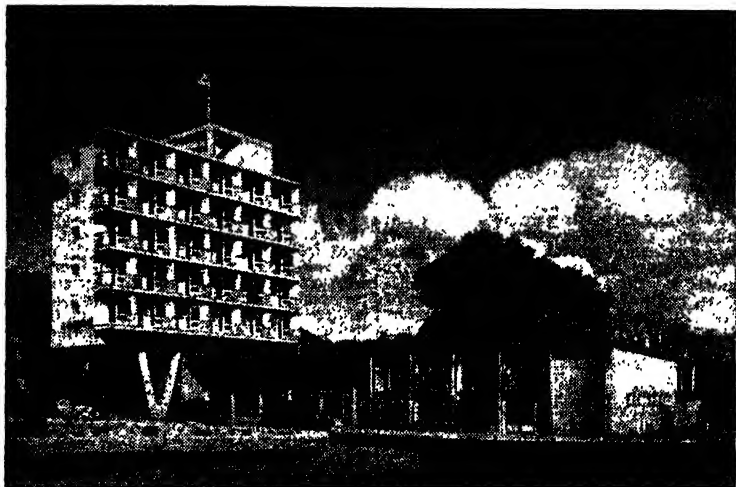
Hotel, a house providing refreshment and accommodation for travellers; the modern counterpart of the inn. The word 'hotel' was first applied to the superior type of Eng. inn about the time of the Fr. Revolution, and it still is used in France for a large house or public building, such as a tn hall (*hôtel de ville*) or a hospital (*hôtel dieu*).

The traveller has sought shelter on his journeys at inns from time immemorial. As travel facilities have progressed from the primitive to the luxurious, so have inns and H.s. Sev. inns are mentioned in the Bible, the best known being the inn which had no room for Joseph and Mary at the time of the birth of Jesus. In countries under the domination of the Rom. Empire inns were to be found on the prin. routes, the customary sign being an ivy bush. After the departure of the Romans from Britain the wayfarer would find hospitality at monasteries and other religious houses. In time, the monks who had been detailed to look after guests took over hospices specially built for the purpose; sometimes the lord of the manor would provide a similar house. Innkeepers tended to become important citizens, and they were given a charter, as innholders, in 1514. The names of old inns and their signs often recall this early association with church and nobility;

examples are the Angel Inn, Devonshire Arms, Manor H., the Castle, the Mitre. The Fighting Cock Inn at St Albans is reputed to be the oldest in Britain, dating from the 9th cent.

The stage coach, as the first organised form of public transport, brought prosperity to innkeepers from about 1650 onwards, and as inns were generally used as stopping-places many innkeepers were active in developing services. The typical inn of the time consisted of a central courtyard surrounded by galleried buildings, with rooms for guests, stables for

Soon after the turn of the century, traffic began to be restored to the roads by the bicycle, the motor car, and the motor coach. There was also an increasing number of people who began to take holidays, firstly on medical advice which directed them to spas and health resorts, and then as a means of recreation and recuperation at pleasure and holiday resorts. In these times many large private houses in key positions were quickly converted to use as H.s and boarding-houses. Later came the holiday camp to meet a demand for a combined holiday



H. de Burgh Galsworthy

THE DOVER STAGE HOTEL, DOVER

Public rooms on the right; bedroom block on the left

horses and coaches; a number of ostlers and other servants would be employed. A marked decline in the use of roads followed the introduction of railways in 1840-50. Within a few years the stage coach had disappeared, and many inns either went out of business or reverted to alehouses. The development of rail traffic coincided with great industrial expansion and the introduction of large-scale business founded on new laws relating to companies and banking. The railways soon had a substantial demand from passengers for overnight accommodation on long journeys, and they built H.s adjacent to some of the main stations, and also at ports from which they operated steamships to the Continent and to Ireland. As trade and commerce grew from local to national and international dimensions, business people began to travel more to open up new markets, and many other H.s came into being to cater for them.

centre with a range of entertainment and sporting facilities on the premises.

The newest type of H. is the motel—the motorist's H. Sev. thousand motels operate all over the U.S.A., enabling a motorist to drive into a garage adjoining his bedroom and take meals in a central restaurant. As motels are usually located outside cities, they help to relieve congestion in busy areas. Britain so far has only a very small number of motels.

H.s play an important part in the economic life of many countries, bringing in much valuable foreign currency. Notably in France, Italy, and Switzerland the govs. recognise this by helping H.s to get cheap capital in order to keep up to date, and they also grant tax concessions and other privileges. Brit. govs. do not appear anxious to assist H.s, as no tax reliefs are available, and H.s even have to pay purchase tax on their essential equipment.

The actual capital cost of essential H. accommodation is very heavy in relation to potential earnings. Operating costs vary according to bedroom occupancy, which may fluctuate in a city H. from day to day, and in most resort H.s from month to month; some resort H.s close for 4 or more months in the year. Few city H.s are full for more than 4 nights a week, and it is unusual for a resort H. to take more than it spends in more than 20 weeks in a year. Efforts to spread the holiday season in Britain over a longer period than 4 months have so far failed.

In many respects H.-keeping remains a family business; the personality of the owner is still important. But economic forces are tending to oust the private operator and replace him by a company, possibly owning a chain of H.s, which is likely to employ a manager, but may lease the building to a tenant.

To-day H.s serve the business community, the holiday-maker, the tourist, and the long-term resident as a temporary home. To do this successfully they must keep abreast and, indeed, ahead of public demands. In the highest class, H.s must have bedrooms with private bathrooms; bedrooms convertible to sitting rooms; room services to provide everything from a newspaper to an elaborate dinner; central heating, air conditioning, telephone, radio, television, and a variety of other entertainment. The development from shop to department store has its parallel in the H. business which ranges from the small inn to the giant H. of 1000 or more rooms.

The world's largest H. is the Conrad Hilton in Chicago with 3000 bedrooms; the largest in Britain is the Regent Palace in London, with 1100 rooms. (Outside America, where there are many H.s with 500 rooms, it is not usual for H.s to have more than 250 rooms. In Britain there are about 9000 licensed H.s, and probably at least 50,000 unlicensed H.s, boarding-houses, guest-houses, and similar premises. Attempts to classify H.s are not entirely successful, as at best they can seldom do more than record the structural details of the building, such as number of bedrooms, bathrooms, public rooms, etc. In Britain the Automobile Association and the Royal Automobile Club publish guides for their motorist members which use a starring system to indicate the facilities available. In other countries (e.g. Ireland) methods of grading H.s have been tried and abandoned.

Hotel and Catering Industry in Britain. The number of employees in Brit. H.s is about 250,000; the total in the H. and catering industry, excluding public houses, is 650,000, of whom 75 per cent are women.

Employers belong to the Brit. H.s and Restaurants Association (88 Brook Street, London, W.1) which is affiliated to the International H. Association, with H.Q. in Paris, comprising some 40 national H. associations. The professional body for the industry in Britain is the H. and

Catering Institute (24 Portman Square, London, W.1), which undertakes educational and training work throughout the country. Membership of the Institute is in 3 categories: Fellow (F.H.C.I.), Member (M.H.C.I.), and Associate Member (A.M.H.C.I.). A National Joint Apprenticeship Council operates a 5-year training scheme for cooks, the foundation for a career leading to top appointments such as *chef de cuisine*.

Legally there is no standard definition of the word 'hotel,' though it has recognised meanings for different purposes. The Catering Wages Act, for example, includes H.s in a definition of a 'Residential Establishment' with inns, boarding-houses, guest-houses, hostels, and clubs having 4 or more guest bedrooms. From the point of view of the guest, H.s fall into 2 main categories, those which were formerly called 'inns' but are now called 'hotels,' and the rest, which are technically 'lodging-houses.' A respectable traveller, willing to pay the price charged, is entitled to refreshment and, if he requires it and it is available, sleeping accommodation at an H. which is defined in the Hotel Proprietors Act, 1956, as an 'establishment held out by the proprietor as offering food, drink, and, if so required, sleeping accommodation, without special contract, to any traveller presenting himself who appears able and willing to pay a reasonable sum for the services and facilities provided and who is in a fit state to be received.' At such an H. the proprietor has a special responsibility for the property of a guest who has reserved a room for the night. He is obliged to compensate the guest for loss or damage, except where the guest's own negligence caused the loss or damage. By exhibiting a notice prescribed in the Act, the H.-keeper can limit his liability to £50 for any one article or £100 for the property of any guest, but if he or his staff are proved negligent he loses this protection. The proprietor has a lien on a guest's property for the payment of his account. The Act has relieved H.-keepers from liability in respect of guests' motor-cars, and they have now no lien on such cars. The proprietor can sell goods held on lien if his account is not paid within 6 weeks.

The general principles of the law relating to H.-keepers and formerly to inn-keepers date from the 15th cent. and possibly earlier. The Common Law then distinguished inns from alehouses by recognising the innkeeper as a kind of public servant owing a special duty to travellers.

A 'lodging-house' keeper, who may operate a private H., residential H., boarding-house, guest-house, or similar business, can pick and choose guests, and while having a duty to take reasonable care of a guest's property is not liable for loss or damage unless proved negligent. He has no right of lien.

All guests of 16 years of age and over, whether Brit. or alien, must register their names, nationality, and date of arrival

when staying for 1 night or more in an H. or other premises in which accommodation is provided for reward. Persons not of Brit. nationality have in addition to supply details of passport and next destination.

H.s may also be broadly divided into licensed and unlicensed establs., depending on their being able to serve intoxicating liquor or not. In England and Wales the same type of licence applies both to H.s and public houses, and service of drinks to non-residents can be made only within the same permitted hrs as apply generally throughout the dist., though residents may be supplied at any time. The Royal Commission on Licensing (1929-31) recommended that H.s should have a separate licence, more suitable to their business, but although Bills have been promoted in Parliament to give effect to this recommendation they have not been successful.

In Scotland licensed H.s have an 'inn and hotel' certificate (which corresponds to a justice's licence in England) distinguishing them from public houses. The only effect of this is to permit sale on Sundays when the public houses are closed, but then only to residents and bona-fide travellers; it does not enable special permitted hrs to be fixed for H.s.

The licensing arrangements in Britain differ in many respects from those in operation in other countries. Some anomalies are perplexing to tourists, as, for example, the rule that a non-resident cannot have a drink with a meal in Wales on a Sunday in an H., though a resident at the H. can be supplied. In England both could be supplied. *See also* INNS AND INNKEEPERS.

Hotham, William, 1st Lord (1736-1813), naval officer. He entered the navy in 1748, in 1751 sailed to North America, and ultimately served in the West Indies. He took part in the defence of Sandy Hook and Rhode Is. under Lord Howe. H.'s actions against the Fr. off Genoa and off Hyères (1795) were adversely criticised by Nelson in his letters.

Hotham, Mount (altitude 6100 ft), one of the highest peaks in the Barry range, Victoria, Australia, about 135 m. ENF. of Melbourne, a popular snow-sports resort.

Hothouse describes a glazed and heated structure used in horticulture for growing plants out of season or in colder climates by allowing close control of temp., ventilation, and light to be exercised. Glazing extends to roof and all sides, and may be, with equal efficiency, of clear or semi-obscured horticult. glass. If a tenant's structure, it must be unattached to ground, permanent walls or buildings, capable of being dismantled and portable, but it may rest on a loose brick, not cemented, foundation. The 3 common types are: span roof, ranging from the single span garden greenhouse to the many-spanned commercial glasshouse, erected with ridge running N. and S. to admit maximum sunlight; three-quarter span roof, preferably built adjoining a SW. or S. wall; and the single span lean-to

roof, similarly situated. The smallest economic size for equable heating is probably 12 ft × 8 ft. Site must be sunny, on well-drained soil, and foundations draught-proof. Heating equipment depends upon the minimum winter temp. to be maintained. Tropical or semi-tropical plants and vegetables require much higher temps. than temperate flowers such as primulas. A house in which the night temp. in winter does not fall below 40° F. in the severest weather is termed a cool greenhouse. It is suitable for the raising of such plants as alonsoa, begonia, calceolaria, carnations, celosia, cineraria, coleus, cyclamen, diascia, franccon, gerbera, gloxinia, grevillea, petunia, rhodanthe, schizanthus, streptocarpus, sweet pea, verbena, zinnia, etc., from seed; chrysanthemum, coleus, cyrtis, fuchsia, hydrangea, oleander, pelargonium, plumbago, salvia, and solanum from cuttings; and most bulb species from corms or offsets. A warm or stove house is one in which a minimum winter temp. of 60° F. is maintained, in which many flowers can be forced, vegetables grown out of season, and plants raised from seed or cuttings for later planting out of doors. The range of tender flowers that can be grown include achimene, allamanda, amaryllis, anthurium, bougainvillea, bouvardia, caladium, clerodendron, croton, dipladenia, eucharis, exacum, gardenia, gesnera, hippeastrum, hoyo, impatiens, ixora, jacobinia, jasmine, justica, lapageria, nepenthe, polisetia, stephanotis, thunbergia, and torenia. Choice of heating apparatus depends also on the size of house. Small cool houses may be heated with special fumeless oilstoves, gas, or electrical apparatus. Gas and electrical heating offer the advantage of thermostatic control, but are seldom practical at an economic cost for the maintenance of forcing temps. The most economic heating equipment consists of hot water or steam pipes extending along the sides, etc., of the house, together with a furnace or slow-combustion stove. This may be oil or gas-fired, but solid fuel, coke or anthracite, is most economical to-day. Techniques of soil-warming by electric cable or wire may be utilised with advantage in most houses. The aim of ventilation is to change the air without draughts. Roof ventilators are essential. Stage ventilation at the side of a house is rarely needed in winter, but helpful in summer. Sub-stage ventilators admitting air on to heating pipes are good for winter use. A constant water supply is essential in H.s, and may be arranged by gutters and pipes draining into a lidded cistern sunk to floor level inside the structure. Modern houses of steel, aluminium or alloy construction are less costly to maintain than wooden, but care should be taken to see that facilities for supporting plants by training wires or strings are provided. Whether grown in pots, boxes, or borders, H.-grown plants require well-balanced, fertile soils. Making up of soil composts for seed-growing and potting is simplified by use of formulae developed by the John Innes Horticult.

resort of highwaymen from the 17th until the early 19th cents. From 1918 it was the continental airport for London until this was transferred to Croydon in 1920.

Hour, twenty-fourth part of a day. In many countries the H.s are counted from midnight, and 2 twelves are reckoned, but in certain parts of Italy 24 H.s are counted, beginning with sunset, so that noon and midnight occur at different times each day. The 24-H. mode of reckoning is used in the Brit. Army, the *Nautical Almanac*, *Whitaker's Almanack*, etc., e.g. 12.5 A.M. is reckoned as 00.05 H., 11.50 P.M. as 23.50 H.s. Each H. is divided into 60 min. and each min. into 60 sec. Many nations, e.g. Greeks, Jews, and Babylonians, divided their day and night into unequal or planetary H.s, and double H.s of 120 min. were employed by the Japanese and Chinese.

Hour-angle, of a star, is the angle which the star's declination circle makes with the meridian. Astronomers measure the H. westward from the observer's meridian, from 0° to 360° or from 0h to 24h. The definition applies to any heavenly body. Thus if a sundial registers 10 A.M., this implies that the sun is 30° or 2h E. of the observer's meridian and hence the H. of the sun is 330° or 22h.

Hour-circle, in astronomy, any great circle drawn through the poles. The fixed stars complete their apparent revolution round the earth in 24 hrs of sidereal time, passing through 360° in 24 hrs, i.e. 15° in 1 hr. If, therefore, 2 observers are 15° of long. from each other, one has any fixed star 1 hr of sidereal time later in his meridian than the other.

Hour-glass, instrument for measuring intervals of time which consists of 2 glass bulbs joined by a narrow neck. One of the bulbs may be filled with sand (see SAND GLASS) or with mercury which passes through the narrow aperture to the other bulb in the space of an hr, if an H., or a min., if a min.-glass.

Hourl, name for a beautiful damsel endowed with perpetual youth, whose companionship in Paradise is the reward of devout Muslims after death. The word comes from the Persian *hauri*; Arabian *haurā*, a black-eyed virgin.

Hours and Wages, see LABOUR, WAGES AND HOURS OF.

Housatonic, riv. (length 130 m.). New England, U.S.A., rises in Berkshire co., Massachusetts, and flows generally S. through Connecticut to enter Long Is. Sound at Milford. It is navigable to Shelton and Derby.

House, Edward Mandell (1858-1938), friend and advisor of Woodrow Wilson, b. Houston, Texas, U.S.A. He was educ. at Cornell Univ., and later made a comfortable fortune from his Texas plantations and other business ventures. Although he never ran for office himself, he took a keen interest in the politics of Texas, and was largely instrumental in the nomination and election of a number of its governors and senators. H. was a progressive Democrat. When Woodrow Wilson was prominently mentioned for the

Democratic nomination for the presidency in 1912, H. visited Wilson, then the governor of New Jersey. The 2 men found that they thought alike on public questions and policies, and a friendship was begun which was to last without a break until the closing months of Wilson's life. When Wilson was elected H. was sent to Europe as the President's personal representative, a practice followed by President Roosevelt in 1940 and 1941. He had interviews with most of the rulers and leading statesmen there. When America entered the war in 1917, H. once more went to Europe as chief of the mission to study means of fulfilling Allied war needs. He then became a member of the Allied War Council, and when the Powers met at Versailles to draft the peace treaty, Wilson named H. as one of the Amer. peace commissioners. As such he took a considerable part in drafting the League of Nations covenant. See *The Intimate Papers of Colonel House*, ed. by Prof. C. Seymour, 1926-8; A. D. Howden Smith, *The Real Colonel House*, 1918, and *Mr. House of Texas*, 1940.

House, a dwelling; a building for human habitation. The term therefore embraces every form of dwelling from a palace to a peasant's hut. It includes not only detached but semi-detached dwellings; and also, theoretically, such part of a larger building as is lived in by a single resident or a family. In practice, however, where a small 2-storey H. is planned to accommodate 2 families, one above the other, each storey is often called a 'maisonnette', or, in America, 'duplex'; and where a building originally planned as a single H. is let to a number of tenants, their respective groups of H.s are called 'tenements'; but where the building has been specially planned or adapted for a number of separate tenancies, they are usually called 'flats', or, in America, 'apartments.' A modern detached 1-storey H. is generally described as a 'bungalow' (q.v.). As will appear from the following article, all these types have a long hist. 'Palace' is dealt with separately, and the most primitive types of hut-dwellings, such as those found at Skara Brae (Orkneys), Chysauster (Cornwall), and the Glastonbury Lake Vil. are not described here.

Probably the oldest known H.s that really merit the name are those forming the 'model village' at Kahūn in Egypt, built c. 2500 bc to accommodate workmen and officials engaged in erecting a neighbouring pyramid. The vil. is laid out on a rectangular or gridiron plan. It contained some 300 dwellings for artisans, larger H.s for foremen, and mansions for the chief administrative officials. The artisans' cottages contained 3 rooms opening off a small courtyard, from which a staircase led up to a flat roof. The foremen's dwellings had slightly larger rooms, 3 to 5 in number. The 10 mansions were of uniform plan. Each contained c. 70 rooms and occupied a site 198 ft by 138 ft. Each accommodated a considerable staff of servants besides

the owner's family, and had 2 courtyards—one containing a water-tank.

Rather later, c. 2000 BC, were the H.s built at Ur (q.v.) of the Chaldees in Abraham's time. Externally they had blank walls facing on to narrow and probably dirty streets, but internally they were comfortable though not luxurious. Each contained 13 or 14 rooms on 2 storeys, and had brick staircases and terracotta drainpipes. The imposing royal palace at Knossos (q.v.) in Crete, erected before 2000 BC, had a more elaborate scheme of drainage, one system taking away the rain-water, the other the sewage from the latrines.

In Hellenic Greece (5th–4th cents. BC), although temples and public buildings were erected on a magnificent scale,

H.s had a colonnade round the internal court, which usually contained a central water-tank filled with rain-water.

Pompeii (q.v.), in S. Italy, is a Greco-Rom. or Hellenistic tn, damaged by an earthquake, AD 63, and then submerged in volcanic ash, AD 79. Its excavation in modern times has revealed a very high standard of comfort, refinement, wealth, and luxury. The Gk type of H. was adopted, but the arrangement of rooms was more formal and symmetrical. Some of the larger examples included an internal garden.

The city of Rome, at the height of its glory, contained about a million people; and the palaces—now all in ruins—of the later emperors were magnificent. Outside the central area where all the



German State Railways

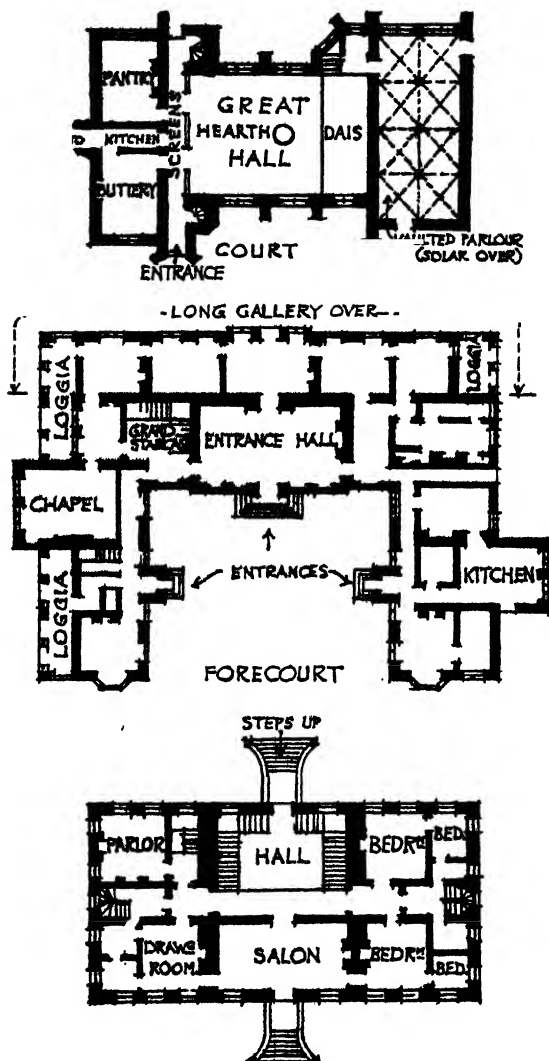
A BLOCK OF FLATS IN GERMANY, REPRESENTATIVE OF A TYPE WIDELY ADOPTED

dwellings were more modest, and relatively few have survived. Even in Athens, renowned for its civic and religious architecture, the standard of domestic architecture was deplorably low in most of the squalid dwellings crowded together in narrow, tortuous, dirty, and unlighted streets. The typical Gk H. was 2 storeys high. The external walls were blank except for the entrance doorway, all the rooms facing into an inner courtyard. A number of H.s have been excavated at Olynthus in Macedonia, at Priene in Asia Minor, and on the is. of Delos. At Olynthus the tn was laid out on a gridiron plan, with main streets 16 to 23 ft wide dividing the area into *insulae* or blocks, each c. 283 by 117 ft. Each block was bisected by an alley 4 ft 6 in. wide, and the half-blocks so formed were further divided into H.-lots, c. 57 ft square. The walls of the H.s were mostly of mud-brick on a foundation of rubble-stone. The H.s faced S. and each had an internal courtyard paved with cobbles. There was one large room, the *oecus*, which had a central hearth. Sanitation did not exist.

The H.s at Priene were somewhat similar, but most of them had a long passage running from front to back of the H. At Delos, rather later in date, many

splendid public buildings stood, but within the perimeter of the city walls, the bulk of the pop. was housed in tall 'flats,' or apartment-H.s, all erected by private enterprise, and many of these by dishonest speculative builders.

The ground-floor of each block generally consisted of shops (*tabernae*), which had hinged wooden flaps or shutters that could be let down to form a counter, projecting over the pavement. The upper storeys were of flimsy timber framing, at first faced with wattle-and-daub, later with concrete. The roofs at first were covered with wood shingles, later with tiles. Fires and collapses were frequent and fatal. In the reign of Augustus (27 BC–AD 14), new building regulations prescribed the use of solid brickwork for the lower part of such buildings, and limited their total height to 70 ft. Still more stringent regulations in the time of Nero (AD 54–68) insisted on fireproof materials for all external walls, and under Trajan (98–117) the maximum total height was reduced to 60 ft. These tenements had no provision for sanitation, washing, cooking, or heating, but Rome had a superb and most elaborate system of water-supply. The larger private H.s seem to have had baths and drainage. None of the tenement-H.s now remain in



PLANS, TO UNIFORM SCALE, OF THREE FAMOUS ENGLISH HOUSES

Part of Penshurst Place, Kent, 1388 (top), Aston Hall, Birmingham, 1618-35 (middle), and Coleshill, Berks, 1650 (bottom), showing the change from the discomfort of common life in the Great Hall to the increased comfort, dignity, and privacy of the Jacobean period, and then to the formal and symmetrical planning of Coleshill

Rome, but at Ostia—a few m. away—there are many such, with balconies and staircases intact, all built of brick and concrete.

In Britain the foundations and base-ments of a large number of Rom. *tu-H.s* may be seen, notably at Verulamium near St Albans. They were centrally heated by hot air from a furnace below ground-level. The hot air passed through ducts in the floors and flues in the walls. Every H. of any importance had its own hot bath. The prin. rooms had handsome mosaic floors, and gay paintings on the plastered walls. Britain also possesses c. 500 examples of the Rom. 'villa,' i.e. a country-H. or farm-H. from which an extensive estate was sometimes administered. They are mainly found in the S. half of England. The most important are at Bignor, Sussex; Brading, Isle of Wight; Chedworth, Glos.; Lullingstone and Folkestone, Kent; Northleigh and Woodchester, Oxon. Some of them contain over 50 rooms, providing for all the needs of a large farm as well as accommodation for the owner's family, servants, and labourers. In them, as in the *tu H.s*, there is usually a central-heating system and some provision of baths.

After the collapse of the Rom. Empire in the 5th cent. AD, H.-building was interrupted, and Britain resembled continental Europe in the low standard of dwellings for all classes that prevailed during the next centuries. There were fortified dwellings of the feudal nobility on the one hand (see CASTLE), and the wretched hovels of their serfs—scarcely to be reckoned as architecture—on the other. There were no middle-class H.s to speak of between the 5th cent. and the 13th or even the 14th—so that hardly any early medieval dwelling-H.s have survived. The so-called 'Jews' Houses' at Lincoln, 'Moyses Hall' at Bury St Edmunds, and 'King John's House' at Southampton, are rare Eng. examples, all in stone. The few remaining stone manor-H.s of the Middle Ages are very simple in plan, having only one large room—the 'Great Hall'—in which the owner, his family, his servants, and his dogs all lived, dined, and slept, keeping themselves warm around a log-fire that burned on a central hearth, the smoke from which rose to an opening in the timber roof above. The floor was of stone, covered with rushes which, in spite of frequent renewal, became very foul. The windows were at first unglazed, and were closed with wooden shutters. The kitchen, larder, and buttery were separated from the great hall by wooden screens. There were no carpets, upholstery, hangings, or panelling; and even in these upper-class H.s there was very little furniture.

Improvements between the 13th cent. and the 16th included a dais, raised a few in. above the fifth of the floor in the great hall, with the 'high table' at which the owner and his family dined; a private bedroom for the owner and his wife; bedrooms for the other members of his

family and for guests; a 'solar' or 'parlour' or private sitting-room for the family; glazed windows; plastered ceilings; panelled or tapestried walls; fire-places against a wall instead of in the middle of the hall floor, and flues running up from them into chimney-stacks; and, in fact, comfort and refinement all round. Yet, even in Elizabethan days, Eng. H.s must have been very dirty, for the domestic and sanitary arrangements were still practically unknown, even in the mansions of the aristocracy. All the foregoing paragraph applies exclusively to upper-class medieval H.s, of which Penshurst Place, Kent (1388) and Great Chalfield Manor H., Wilts (c. 1450) are typical Eng. examples. It was not until the Middle Ages were over that H.s for yeomen and the more prosperous artisans were built of substantial materials or provided with the barest comforts and conveniences.

Throughout Europe, but especially in the prosperous countries of W. Europe (including England), there was a steady advance in domestic refinement and comfort from the 16th cent. onwards, as the civilising influence of the Renaissance spread outwards from Italy; and the standard of living of the upper classes began to match that attained, long before, in Rom. Britain. The 'Great Hall' gave way to a smaller entrance hall from which the various living rooms opened; and in which was usually a fine staircase. Upstairs was a magnificent 'Long Gallery,' in many great mansions a hundred ft or more in length, which served as a family recreation room and sitting room as well as for the display of pictures and fine furniture. Mullioned windows looked out on to pleasant formal gardens with terraces and summer-H.s. There were fewer draughts, fewer smells, far more light, and far more comfort. Examples of large Tudor, Elizabethan, and Jacobean H.s are Hampton Court Palace (older portion), 1515-30; Sutton Place, Guildford, 1523-5; Little Moreton Hall, Cheshire, 1550-9; Wollaton Hall, Notts, 1580-8; Hatfield H., Herts, 1607-11; Aston Hall, Birmingham, 1618-1635. The Queen's H. at Greenwich, 1617-35, by Inigo Jones (q.v.); and the *château* of Maisons near Paris, 1642-51, by F. Mansart (q.v.) are examples of mature Renaissance design.

The period from c. 1660 to c. 1800 in England, which included the career of Sir Christopher Wren (q.v.) and the Georgian phase, saw a certain lessening of picturesqueness in the design of the smaller H.s, due in part to the substitution of sash windows for mullioned windows, and to the final abolition of pinnacles, battlements, and other romantic relics of the Gothic period, while the detail of these H.s became more scholarly and their internal arrangements more refined and homely. Abreast of these charming small Georgian dwellings, however, were erected some of the largest and most overpowering mansions England has ever seen, e.g. Blenheim Palace, Castle

Howard, Holkham, Houghton, designed by Eng. 'Palladian' and 'Baroque' architects (see VANBRUGH; KENT); and others by Robert Adam (q.v.), e.g. Kenwood and Osterley. Similar great piles were built in France, Germany, and Spain during the 18th cent., though there the style was more or less Baroque (q.v.). In startling contrast to these lordly seats were the rows of mean cottages erected in tens of thousands adjoining the collieries and 'mills' of N. and Midland England, as well as in London, as a result of the Industrial Revolution which began in the 18th cent.

The Regency period in England (see ENGLISH ARCHITECTURE) was the last phase of Georgian architecture; and the Gothic Revival (q.v.) which followed it did not seriously affect domestic architecture, though John Nash (q.v.) erected some quaint Gothic H.s at Park Village, Regent's Park in London, c. 1824. In fact, it was not until c. 1850 that Eng. H.-design began to assume that aspect of pretentiousness and over-ornamentation that has made the Victorian era appear ridiculous to so many modern critics. The goods displayed at the Great Exhibition of 1851 set a deplorable example of design that influenced the taste of Victorian architects for 50 years ahead, and was faithfully followed by the speculative builders who erected the vast majority of all Victorian dwellings.

Wm Morris (q.v.) pleaded for some simplicity and honest craftsmanship. In 1854 he employed his friend Philip Webb to design him 'The Red House' at Bexley in Kent to embody his ideals; but the most fundamental changes of taste were due to the architect, C. F. A. Voysey (q.v.), who never built a cathedral or a tn hall, never won a competition, and never became a Royal Academician, but who designed, between c. 1890 and c. 1914 a number of delightful and simple medium-sized H.s in various parts of England. His influence was great in continental countries (especially Germany), where architecture during the 19th cent. had followed a course much like that in England.

Rather younger than Voysey was Sir Edwin Lutyens (q.v.), who began designing H.s c. 1888, at a very early age—in the native or rustic Eng. tradition at first, and following Voysey's lead to some extent, but later in his career turning to a more formal and Georgian style.

At the end of the First World War, when there was a clamour in England, as in other European countries, for a great quantity of 'Homes for Heroes,' the simple type of H. originated by Voysey became the model for the gov.-sponsored housing schemes, which spread over agric. land too freely outside our tns because they were laid on spacious 'garden-suburb' lines, a fashion encouraged by Raymond Unwin (q.v.).

Partly as a reaction against this type of design and layout, the younger architects of the second quarter of the 20th cent. tended to follow the theories of

'Le Corbusier' (q.v.), coming from France, and, later, of F. L. Wright (q.v.) coming from America. Apart from the general characteristics of construction mentioned in the article ARCHITECTURE; 9, the new school of thought tends to favour, for domestic design, tall blocks of flats in preference to groups of small H.s; the complete abolition of the despised Victorian 'parlour' or drawing-room; the substitution for it of an all-purpose 'lounge' or 'living-room' with a corner reserved for meals; and highly compact kitchen arrangements adapted to an age when families are small and domestic help almost unobtainable.

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House-duty, Inhabited, tax imposed on inhabited dwelling-houses of the ann. value of upwards of £20 in England, Wales, and Scotland. First introduced in 1778, it was later modified and combined with other taxes. Its incidence was on the legal occupier and not on the owner. There were numerous exemptions, such as houses belonging to the royal family, hospitals, almshouses, school buildings, trade and business houses and others. The duty ceased to be chargeable after 1923-4 (Finance Act, 1924, Section 20).

House-fly, Flesh-fly, or Musca domestica, name given to a species of dipterous insects belonging to the family Muscidae. These flies are widely distributed and very numerous, especially in summer. The eggs are deposited on dung-heaps or similar places, and the larvae feed on their surroundings until pupation, which takes place in a few days' time; at the end of a fortnight they are fully-developed winged insects. The chief characteristics are the sucking proboscis and the bristle-feathered antennae. H.s are considered frequently to be agents in the spreading of disease; they pass the winter chiefly in the pupal state.

House-leek, popular name given to various species of *Sempervivum*, a genus of Crassulaceae. The plants are succulent, have star-shaped flowers, and flourish on the mts of Europe, Asia, and Africa. Sev. species occur in Britain as hardy plants, and their cultivation requires little trouble, as they thrive in the poorest soil. *S. tectorum*, the common H., is frequently planted on the roofs and walls of cottages to keep the slates together. The leaves are arranged in rosettes, are fleshy, and in colour are a greyish-green; the flowers are purplish; and vegetative multiplication takes place by offsets.

In many parts of England, and especially in Huntingdonshire, the H. is planted on the roofs of houses, in the widespread belief that if it is on the roof, the house will never catch fire. In North Africa and the East it is used as a remedy for burns.



F. Whitlam Jones

THE PROBOSCIS OF A HOUSE-FLY

The 2-jointed proboscis is shown, with the palps and the lips (labella) permeated by feeding tubes

House of Commons. — Composition, Officers, and Privileges.—(As to the qualifications for membership, mode of election, and parl. registration, see ELECTIONS.) Up to 1885 the actual membership of the H. of C. stood at 640, but the nominal membership had stood at 658 ever since the Act of Union with Ireland. The Redistribution Act of 1885, by increasing the number of members for Scotland from 60 to 72, brought the nominal total to 670. By the Representation of the People Act, 1918, the number was increased to 707, but the reduction of the number of N. Irish constituencies from 52 to 13 under the Gov. of Ireland Act, 1920, and the cessation of representation for S. Ireland reduced the total number of members of the H. of C. to 615.

By the Representation of the People Act, 1945, 25 new constituencies were created, making the total of 640, but by the Act of 1948 the total distribution was lowered to 625. This Act made provision for periodical reviews of constituencies, and the first of these, approved in 1955, raised the number to 630. The distribution is as follows:

	England	Wales	Scotland	N. Ireland
Counties .	222	26	39	8
Boroughs .	289	10	32	4
Total .	511	36	71	12

Members of the H. of C. receive ann. salaries of £1000 and free travel to and from their constituencies plus a subsistence allowance of £2 a day (except Fridays). Payment of members was introduced in 1911 by vote on the estimates, and this vote is now a permanent feature of the ann. Appropriation Bill. Thus the cost does not fall on the constituencies, which formerly it did in the days when the bors. used to pay for their members. It has been judicially decided that payment of the salary does not depend on attendance at the House.

The prin. officers of the H. of C. are: (1) The Speaker, who receives a salary of £5000 a year, is the authoritative spokesman of the Commons, and the first commoner in the country. He generally retires with a peerage on a pension of £4000 a year. He is elected by the House at every new Parliament, but the Speaker of the old Parliament is customarily re-elected, provided he has not lost his seat. The Crown has the right to reject the person elected, but never avails itself of this privilege. The Speaker never votes save on an equality (see CHAIRMAN). His powers are substantial, especially in rulings as to procedure. The Speaker acts independently of all party considerations, whence it is quite immaterial from which party he may be chosen. His other functions are to maintain order, sign warrants of committal for contempt, reprimand members when necessary, and sign warrants for by-election writs. The impartiality of the Speaker is of little more than a century's standing. In the days of liability to impeachment, ministers in the plenitude of their power were far from solicitous of their opponents' rights, and, so long as the House was dominated by bribery and corruption, the conventional rules implicit in a democratic system could not be developed. (2) The Chairman of Ways and Means, a member of the House who has a salary of £2500 a year, takes the chair when the House goes into committee, maintains order in committee, and acts as Deputy Speaker of the House in the unavoidable absence of the Speaker. He is nominated by the gov. and, like the Speaker, holds office until a dissolution. When acting in committee he can apply the closure (see CLOSURE). He also has important duties in conjunction with the chairman of committees of the upper House in regard to private bills. In his absence the Deputy Chairman, also a salaried officer at £1500 a year, acts for him. (3) Clerk of the H. of C. He is appointed by letters patent and receives a salary of £4500. His prin. functions are to make entries of all that transpires in the House, and from such entries to

prepare the journals, or records of the proceedings in the House. (4) The Serjeant at Arms, who bears the mace when the Speaker enters or leaves the House. He is also appointed by letters patent at a salary of \$2200, and his prin. duty is to execute the directions of the Speaker relative to the maintenance of order. Hence he has power to arrest strangers who have no lawful business in the House, execute warrants for contempt, and bring persons in custody before the Bar of the House. (5) There are also a number of minor officers such as prin. clerks, assistant and senior clerks, examiners of petitions for private Bills, the editor of the official debates, chaplain, and others.

The privileges of the House rest upon binding legal decisions or statute law: (1) Freedom of speech. This important privilege gives summary protection to persons engaged in the pub. of parl. papers (passed in consequence of the celebrated case of *Stockdale v. Hansard*). By the Act of 1840, proceedings, criminal or civil, against persons for the pub. of papers printed by order of either House of Parliament will be immediately stayed on the production of a certificate, verified by affidavit, to the effect that such pub. is by order of either House of Parliament. Formerly the House did not favour the pub. of its debates, because the Crown thereby learned what passed within its walls (see NEWSPAPERS for the hist. of newspaper reporters in the Gallery). Limits to the freedom of debate are imposed by the House itself; any member is liable to censure and punishment by the House if he utters offensive words in Parliament. Such punishment may be admonition, or the offender may be suspended, expelled, or even imprisoned.

(2) Freedom from arrest. This privilege is co-extensive with that of the House of Lords. Similarly, when a member of the H. of C. commits a crime, he has no immunity, but is arrested like any other subject, and, if convicted, the judge notifies the Speaker. The papers are then laid before the House at their request, and the question of expulsion is considered. (3) Right of access to the Crown through the Speaker; this right is exercised only when an address is presented to the sovereign by the whole House. Addresses may also be communicated to the sovereign by any members who have access to her as privy councillors or as members of the royal household. (4) The right of the House to regulate its own constitution, as a corollary of which the House is theoretically entitled to settle disputed elections and to pronounce on the legality or otherwise of an election. By virtue of this privilege the House can also expel or refuse to admit persons, even though elected as members, whom they regard as unworthy of their assembly.

(5) The right to control finance, and initiate financial legislation (see especially PARLIAMENTARY ACT, 1911). (6) The right of impeachment. (But see the earlier part of this article and IMPEACHMENT.)

(7) The right (according to Sir Erskine May, not a right of privilege at all, but merely an expectation that the Crown will exhibit its habitual courtesy in the matter) to have the most favourable interpretation put by the Crown on deliberations of the House. (8) The right to punish both members and strangers for contempt. A person committed by the House is usually given an opportunity of apologising. If not set free at the end of a session, he can demand a writ of habeas corpus. (9) The right to decide, uncontrolled by the law courts, all matters arising within the precincts of the House. (10) The right to exclude strangers. Formerly any member could directly object to the presence of strangers, but according to the modern practice he must first call the attention of the Speaker to the matter, when the question of ejection is determined by vote. The Speaker, however, has power to order strangers to withdraw.

PROCEDURE IN THE HOUSE OF COMMONS.—(For the necessary quorum see COUNT OUT.) The order in which business is taken (when these matters arise) is as follows: (1) Private business. (2) Presentation of public petitions. (3) Motions for leave of absence. (4) Notices of motions. (5) Questions (which occupy the first hr. of every sitting day except Fridays). (6) Motions for adjournment under Standing Order 9 in order to discuss some matter of urgent public importance. (7) Presentation of Bills. (8) Matters taken at the commencement of public business which must relate to the business of the House. (9) Orders of the day and notices of motions as set down on the notice paper for the particular day (the prin. business for the day).

Motions, amendments, questions, and divisions are to be found as far back as the 16th cent., and in the 17th cent. their form was in all essentials the same as at the present date.

Motions.—Some require previous notice, others may be moved without notice. As a rule motions which relate to matters of substance require to be known beforehand. Formal or uncontentious motions do not require to be notified beforehand. An adjournment motion under urgency rule is very effective if allowed, but an examination of the hist. of parl. proceedings shows that it is difficult to secure a debate on an urgency motion for the adjournment. There exists a body of precedents as to what is 'urgent,' 'definite,' and 'of public importance' in this context, and these have tended to restrict opportunities for discussion on adjournment motions. 'Urgency' motions are those which may be discussed before the opening of public business. If a motion on the adjournment is accepted by the Speaker, it must either be supported by 40 members or by the House itself on a div.; and in practice the whole opposition supports the motion. The daily adjournment motion which is moved at the close of public business affords a half-hr debate

generally used to raise individual grievances. A motion for the adjournment is also used to provide opportunity for whole-day debate on matters of topical and general interest without the restrictions imposed by other means (but the discussion must not involve legislation).

Amendments.—An amendment is really a variety of motion. 'It is a subsidiary motion, i.e. a motion for fundamental or partial change in, or curtailment of, or addition to, a motion, already before the House' (Redlich).

Divisions.—The div. lobbies, which run outside the Chamber, on each side, play an essential part in divs. When the Speaker's decision as to the result of a vote by voices has been stated and challenged by at least 2 members, the Speaker (or the chairman, in committee) orders the lobbies to be cleared. Two min. after this the Speaker (or chairman) again puts the question, and declares his decision on the voices. If this is challenged a second time, the 'ayes' are directed into the lobby on the right, and the 'noes' into that on the left, and 2 tellers are appointed for each side. If tellers cannot be found for one side, the decision goes to the other without a div. The tellers count the members as they re-enter the House from each lobby, and clerks mark their names on a list. Six min. after the initial order 'Clear the lobbies' the Speaker directs the doors leading from the House into the lobbies to be locked, and they remain so until the figures are announced. The tellers stand before the table, those for the majority on the right, and one of these reports the numbers. The Speaker (or chairman) then declares the decision of the House. Warning of a div. is given by bells ringing in various parts of the building. A member in the House when a div. is called is not now obliged to vote. Formerly it was the custom to exclude all strangers during a div., but they are now allowed to remain in the galleries. If the numbers in a div. are equal the Speaker (or chairman) gives a casting vote, and usually does so in a way which will give the House a further opportunity to decide finally on the issue. Every matter is determined upon questions put by the Speaker (or chairman) and resolved in the affirmative or negative, as the case may be, e.g. 'That this Bill be read a second time.'

Debates.—The rules for the conduct of debates are as far as possible adapted to the curtailment of unnecessary argument. In the session of 1919 the power of the chair was made independent of any preliminary motion, and, by a standing order then made, the Speaker (or, in committee, the chairman of ways and means and the deputy chairman) were given power in respect of any motion on any Bill, under consideration either in committee of the whole House or on report, to select the new clauses or amendments to be proposed. Consistently with the theory of the will of the majority, no less than with the conduct of any orderly discussion,

many of the rules of debate are designed to prevent the revival of a debate which has already been brought to an end, e.g. all references to previous debates in the House during the current session upon any question not under discussion is forbidden, though debates on the earlier stages of a Bill may be referred to in a debate on a later stage. No member is allowed to speak against or reflect upon any previous determination of the House during the current session except on a motion for rescinding such determination. Similarly no allusion may be made to debates in the upper House. Again no member is supposed to read his speech (though ministers often do), but the use of copious notes is customary. Members may not insult other members.

The Opposition.—The leader of the Opposition has a task of considerable public importance and, under the Ministers of the Crown Act, 1937, is paid a salary of £2000 a year charged on the Consolidated Fund. Thus the gov. by taxation raises £2000 a year in order to enable its prin. opponent to criticise it. This is an essential part of democratic gov., and promotes effective criticism. The Opposition does not expect to be able to turn out the gov. by its vote. It hopes to persuade the general body of voters to do so at the next election and, so long as the gov.'s majority holds, the gov. cannot be defeated otherwise than on a 'snap' vote. The gov. can always reverse a decision by sending out an urgent whip, and getting together its majority; but it is recognised that a defeat is damaging to a gov.'s prestige and it is the purpose of the Opposition to show that it could manage the nation's affairs much more competently. Its task is not merely to oppose objectionable gov. proposals but to secure concessions on gov. Bills, to persuade the gov. to modify its general policy, and finally to create the necessary public opinion against the gov. ready for the next election; it must take part also in the process of parl. gov. The Opposition parties choose the votes to be put down on supply days. The main subjects to be discussed on the addresses in reply to the speech from the throne and the Consolidated Fund Bills are also selected by the Opposition.

Whips.—There are gov. and opposition whips. The duties of the recognised whips, which are harassing and often thankless, are to keep their party members informed about the business of the House, and ensure that their party is duly represented at a div. They keep the party leaders fully informed about the members generally, and their reaction to Bills and policy, and also act as intermediaries between the leaders and the various local party organisations. In more important debates the order of the chief speakers on each side is arranged between the whips and given to the Speaker, who usually adheres to it. The whip is essentially the creation of the party system (see PARTY GOVERNMENT).

The gov. whips are, technically, junior ministers. The chief whip is parl. secretary to the Treasury. His duty is to arrange the business for each day, and to see that the gov. programme is carried through. He is still colloquially known as 'patronage secretary,' a name which comes from the days when a majority was kept by patronage or influence; and his functions in this respect have not entirely disappeared, for he brings to the attention of the Prime Minister the names of members who merit recognition.

Questions.—Written notice of intention to ask a question must, unless the Speaker gives special leave to the contrary, be delivered to the clerk of the House. Where an oral answer is not required, or the member is not in the House to put the question, or the question is not reached by 3.30 p.m., the minister who has to answer it has the answer printed in Hansard. Questions may however, be postponed by the questioner. Opinions must not be asked, and purely legal questions are not allowed. No imputations on private character are permitted, and imputations on official character may only be made with certain reservations; neither is argument nor irony in order, but it is often introduced in the 'supplementary' oral question. No question can be put about matters pending in a committee. The Speaker is the sole judge of the propriety of a question. Ministers may decline to answer questions on the ground of public policy, and in any case questions to ministers must relate to their respective depts. Sometimes a question is the only means of securing redress of an individual grievance which a member has already put before the appropriate minister without securing satisfaction. Originally a question was asked in order to get an answer to that particular question; but to-day questions are often devices for further probing by means of the 'supplementary.' The answers to questions on the order paper are prepared by civil servants, but a minister must necessarily answer 'supplementaries' on the spur of the moment unless his dept has been able to anticipate the questions; but there is no obligation to answer a 'supplementary.'

Discussion of Estimates.—Twenty-six days are allotted for discussion in Committee of Supply of the ordinary estimates, in which are set out the sums required for the current year. The main groups are for the armed Services—Navy, Army, Air Force, and Defence—and the Civil and Revenue Depts, which cover the other gov. activities. The estimates are presented in Feb. and Mar. The financial year ends on 31 Mar., and before then all supplementary estimates must have been passed, and also a vote on account providing sufficient money for the new financial year in advance of the full grants. Authority is given for this in the Consolidated Fund Bill. The ordinary business of supply continues throughout the session, but must be completed by 5 Aug. On the last 2 allotted days all

outstanding estimates are voted, in committee and on report, without further discussion. The Appropriation Bill gives final authority for the supply for the year for each service. Estimates for the defence depts are debated before, and those for the civil depts after, the end of the financial year. Custom has given the Opposition the right of choosing the subjects for discussion on supply days and on the successive stages of the 2 associated Bills. No motion to increase the amount of an estimate is permitted; if this is necessary a new estimate must be presented. Divs. are taken on a specified sub-head, and the debate afterwards adjourns so that the estimate can be brought up again for discussion.

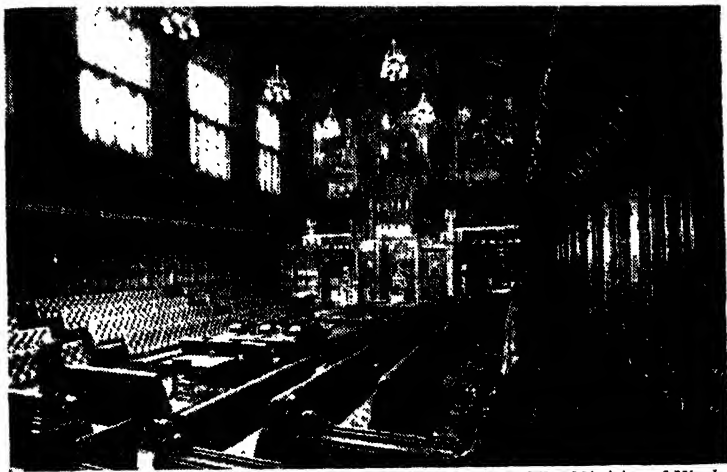
Early in April the Chancellor of the Exchequer presents the Budget, the ann. review of income and expenditure for the previous year, the estimated requirements for the current year, and the detailed taxation proposals by which it is intended to raise the money. The taxation proposals are given immediate effect by resolutions in committee of Ways and Means (except a formal one which is kept open for the purpose of the general Budget debate), and are embodied in the Finance Bill, which the House of Lords has no power to alter (*see REFORM OF THE HOUSE OF LORDS*). *See also PARLIAMENT; PARLIAMENTARY PRIVILEGE.*

House of Lords. The upper House is composed of temporal hereditary peers of the U.K., spiritual Eng. peers, Scottish elected peers, Irish peers elected for life, and lords of appeal in ordinary who are elected for life and sit and vote as barons; all these classes together forming 2 estates of the realm, the lords spiritual and temporal. At present there are 4 peers of the royal blood, 2 archbishops, 21 dukes, 27 marquesses, 134 earls, 109 viscounts, 9 lords of appeal in ordinary including the lord chancellor, 24 bishops (of whom those of London, Durham, and Winchester always sit, and 21 others are appointed as vacancies occur in order of seniority by consecration), 537 barons, 16 Scottish representative peers, and 4 Irish representative peers. A bishop loses his seat on retirement, but a lord of appeal holds his seat for life. The Scottish representative peers are elected by all the Scottish peers assembled at Holyrood whenever an election is directed by royal proclamation. Since the Irish Free State Act, 1922, there has been no election of Irish representative peers, of whom under the 1801 Act of Union there were 28.

The prin. officers of the H. of L. are: (1) The Speaker, usually the lord chancellor. A Speaker of the H. of L. has not the wide powers of his brother in the lower House; questions of order are determined not by him but by the House, and in debate the House and not the Speaker is addressed. An important distinction is that the lord chancellor as one of the prin. members of the gov. takes a leading part in the deliberations of the House, where he is a gov. spokesman. (2) The

Chairman of Committees, who holds office during the lifetime of a Parliament. He takes the chair when the House goes into committee, and superintends all committees and matters appertaining to private Bills. In the absence of the lord chancellor he acts as Speaker. (3) The Clerk of the Parliaments, appointed by letters patent, who keeps the journals of the House, makes minutes of the proceedings, acts as registrar of the House sitting in its judicial capacity, has charge of all records and documents, and signifies the royal assent to Bills that have passed both Houses. He is assisted by the Clerk

session and terminates 40 days after the session. After a dissolution it is enjoyed for a reasonable and convenient time for returning home. (3) The right to demand audience of the sovereign in order to tender him advice as an hereditary counsellor of the Crown. (4) The right to record a written protest in the journals of the House against a measure disapproved of. (5) The right to decline to attend in court as a witness on subpoena (but this privilege has generally been waived). (6) Exemption from jury service. (7) Right to vote by proxy, a right which has been waived since 1868. (8) The



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GENERAL VIEW OF CHAMBER FROM BLACK ROD'S BOX

Assistant and the Reading Clerk. (4) Gentleman Usher of the Black Rod, who is appointed by letters patent and is a member of the royal household. He controls that part of the Palace assigned to the lords, assists at the introduction of peers, summons the attendance of the Commons when necessary, and executes warrants of commitment. His appellation is derived from the black wand, surmounted by a golden lion, which he carries. (5) The Serjeant at Arms, who carries the mace when the lord chancellor enters and leaves the House.

The chief privileges of the upper House are as follows: (1) Freedom of speech (but a peer cannot afterwards publish a speech delivered by him in the House so as to make it a vehicle of slander against any one). (2) Freedom from arrest or molestation. This privilege, which is limited to civil causes, and in no way fetters the administration of criminal justice, commences 40 days before a

right of the House to commit a member or other person for breach of privilege and for contempt for a definite period. If no period is fixed the person committed is released on a prorogation or dissolution. (9) The right of the House to try peers and peeresses for treason or felony, and, conversely, the right of the individual peer to be so tried. This right rests on the literal meaning of *parum suorum* in Magna Carta, and has, illogically, become restricted to the barons of Parliament, and then only in cases of felony. Only twice in this century has the H. of L. met in its ancient capacity as a criminal tribunal of first instance, once in 1901, and then not until 1935, when Lord de Clifford was indicted for manslaughter (a motoring case), and acquitted. (10) The right of the House to try disputed peerage claims. Only lay peers may take part in such trials. (11) The right to act as the final court of appeal from all the superior courts of law in Great Britain (*see PRIVY*

COUNCIL). Some members of the gov. must be in the H. of L., and the conduct of business there must be in the hands of ministers. The effect of the Ministers of the Crown Act, 1937, is that at least 3 ministerial heads of depts., and at least 3 other ministers, must sit in the H. of L. In 1958 the revolutionary Life Peerage Act empowered the sovereign to create men and women life peers and peeresses. See also PARLIAMENT; PARLIAMENTARY PRIVILEGE; REFORM OF THE HOUSE OF LORDS.

Houseboat, riv. boat especially built or converted for habitation. In England these boats are found on many inland waterways, notably the Thames, where their owners have to register with the Thames Conservancy (q.v.), and the Norfolk and Suffolk Broads. Legally it is rank as riv. craft (see RIVER). In the U.S.A. power-driven H.s are popular. In the E. many people spend their whole lives on floating craft.

Housebreaking, see BURGLARY.

Housecraft, see HOMEMAKING.

Household, Royal. The R. H. probably had its origin in the *comitatus* described by Tacitus which consisted of *comites* or companions who were the personal attendants of the Teutonic chieftain. In England before the Conquest the *comites* had been replaced by thegns, the chief of whom were the staller or horse-thegn and the bower-thegn, while in Normandy a similar arrangement had been estab. and each duke had his seneschal or steward, his chamberlain, and his constable. After the Conquest this ducal household was reproduced in the R. H. of England. The hist. of the R. H., however, is difficult to trace, as very few records concerning it are forthcoming. The *Black Book of the Exchequer* enumerates its offices in Henry II's reign, but gives no account of their functions; and the *Collection of Ordinances and Regulations for the Government of the Royal Household, made in Divers Reigns from Edward III to King William and Queen Mary* (printed 1790) contains very scanty information. The *Black Book of the Household* and the *Statutes of Filtham* do, indeed, give some details about the court arrangements during the 15th and 16th cents., and Chamberlayne's *Present State of England* contains a catalogue of the officials at the court of Queen Anne, but no connected hist. is forthcoming. Be this as it may, the existing R. H. is essentially the same as that under the Tudors or Plantagenets, and consists of 3 main depts: the lord steward's dept (Board of Green Cloth), the lord chamberlain's dept, and the master of the horse's dept, which can perhaps claim the greatest antiquity. At the head of the first is the lord steward, who must always be a member of the gov. and a peer, and it is interesting to note that he still possesses a criminal jurisdiction such as was originally inherent in every head of a dept; indeed, all jurisdiction relating to homicide in respect of the R. H. resides in him, and under his mandate alone can

inquests be held or criminals be indicted and tried. Under him are the treasurer, the comptroller, the master of the household, the offices of the almonry, and the paymaster of the household. At the head of the second is the lord chamberlain, who must also be a member of the gov. and a peer, and under him are the vice-chamberlain, the master of the ceremonies, whose duty it is to enforce the observance of the etiquette of the court, the gentleman usher of the Black Rod, the prin. usher of the kingdom, the lords- and grooms-in-waiting, who attend on the sovereign in turn for about 3 weeks at a time, the captain of the Corps of Gentlemen-at-Arms, the captain of the sovereign's bodyguard of the Yeomen of the Guard, the comptroller and examiner of accounts, the dean and the sub-dean of the Chapels Royal, the pages, the master of the king's music, the poet laureate, the royal physicians and surgeons, chaplains, painters, librarians, and musicians.

The Queen Consort's Household (when there is a queen consort) is also in this dept and comprises a lord chamberlain, a treasurer, equerry, and various ladies. These include the mistress of the robes, who attends the queen at all State functions and is the only lady of the court who comes into office with the gov.; 7 ladies of the bedchamber, who must be peeresses; 7 women of the bedchamber, who appear only at court functions; and 4 maids-of-honour, who as a rule are daughters or granddaughters of peers, and who in any case have the right to prefix 'honourable' to their names even if not entitled to do so by birth. The foregoing ladies also attend a queen regnant, except that the maids-of-honour are increased to 8.

The third dept of the R. H. has at its head the master of the horse, who also is a member of the gov. He has charge of all matters connected with the horses and hounds of the sovereign, and under him are the Crown Equerry, who in practice manages the royal stables and stud; the equerries, who are always officers of the armed forces and attend the king in turn like the lords- and grooms-in-waiting; and the pages-of-honour, youths who wait on the king at state ceremonies. Besides the 3 depts mentioned, there is also the Privy Purse Dept which consists of the sovereign's 'personal' staff and includes the keeper of the privy purse and the private secretary. The civil list provides for the maintenance of the R. H., £185,000 being granted for salaries and £121,800 for expenses, besides grants of £60,000 for the privy purse, £13,200 for royal bounty, and £95,000 supplementary provision.

Household Troops are those whose special task it is to guard royal palaces, etc., and to provide escorts for the sovereign on ceremonial occasions. It is normal in peace-time for the Household Cavalry (The Life Guards (q.v.) and the Royal Horse Guards (q.v.) (The Blues)) to guard the official entrance to the grounds of Buckingham Palace, the

Horse Guards' building in Whitehall, while one of the 5 regiments of Foot Guards (q.v.) maintains a guard immediately in front of the palace. The Household Cavalry, together with the Foot Guards, comprise the Household Brigade. *See also* GUARDS.

'Household Words,' *see* DICKENS, CHARLES.

House, O.E. name for the Eucharist, current up to Shakespeare's time. Shakespeare's 'unhoused, unanled' means that Hamlet's father *d.* without receiving the Last Rites, including Holy Communion as the Viaticum ('food for the journey'). The houselling cloth is a linen drape over the Communion rails held up under the communicant's chin at the reception of the sacrament when the latter is placed directly in the mouth. In modern Rom. Catholic practice a metal plate is usually substituted and passed from hand to hand, but the houselling cloth is still used in Belgium (e.g. at Bruges).

Housemaid's Knee, *see* BURSA and BURSITIS.

Houses of Parliament, or Palace of Westminster, *see* PARLIAMENT, HOUSES OF.

Housewifery, *see* HOMEMAKING.

Houseworkers, National Institute of, *see* DOMESTIC SERVANTS.

Housing. GENERAL.—Modern Brit. H. problems have arisen mainly because of the intense industrialisation of Great Britain consequent on the development of the factory system and the introduction of machinery during the Industrial Revolution of the 18th cent., and the negligence of Parliament in dealing with the problem. The drift to the tns which created the urgency for accommodation in newly-developing areas caused the building of sub-standard houses frequently built back-to-back with no passage between them, or dwellings of the 'court' type with no separate sanitary accommodation. The larger houses of the middle classes, who migrated from the growing tns, began to be used to house many separate families, and even cellars were pressed into service as separate dwellings. Death-dealing diseases became rampant and it was these pestilences rather than constructive thought on the H. problem which aroused public opinion to the need for drastic improvements.

The first public Act dealing with H. was not passed until 1851. The manufacturing tns continued to grow rapidly and, because of lack of vision, squalid alleys and wretched slums developed during the 19th cent. Of more recent years the seriousness of the problem has been intensified by the almost entire cessation of house building during the wars 1914-18 and 1939-45. In the case of the Second World War the house famine became more grave because of the damage caused by enemy air attacks. This was followed by the discouragement of private enterprise building due to uneconomic rents.

Public interest in H. was awakened and developed by sev. factors: the introduction of the first legislation on national lines in 1851 mainly through the influence

of Lord Ashley, afterwards the 7th earl of Shaftesbury; the growth of sanitary knowledge; and the realisation of the connection between bad H. conditions and ill-health. Another factor was the greater philanthropic interest which began to be taken in the welfare of the working classes by influential people and employers, resulting in the creation of H. trusts to provide funds for better H. Finally, but no less important, has been the demand on the part of the workers for a higher standard of living and the realisation of the power of their votes to secure the desired results.

The magnitude of Britain's problem can be seen from statistics which, in very round figures, show that there are 2 million houses over 100 years old; 3 million over 80 years old; and approximately 1 million which by proper standards are unfit for occupation and beyond anything but temporary repair. Old houses are not necessarily bad houses and, if properly treated, can be made habitable for many more years. For this reason the Housing Repairs and Rents Act, 1954, made financial provision for what has been called 'patching' these houses. The H. problem is also one reason for recent concentration on slum clearance.

HOUSING LEGISLATION.—In 1851 the first 2 H. enactments were passed by Parliament, namely *The Common Lodging Houses Act* and *The Labouring Classes Lodging Houses Act*. The first gave local authorities power of supervision and inspection. The second authorised bor. councils and local boards of health, with an area covering 25,000 pop. at least, to build 'lodging houses for artisans.' The responsibility and main credit for this legislation belonged to the earl of Shaftesbury. There was a poor response to the granting of these powers because procedure was irksome, costs were prohibitive, and there were no powers of compulsory purchase. The financial position was eased somewhat with the passing of the *Labouring Classes Dwelling Houses Act*, 1866, which made Public Works Loan Board borrowings open to the local authorities for the purpose. *The Public Health Act*, 1875, consolidated the legislation on that subject and made provision for more effective drainage and sanitation, closing of cellar dwellings, and the regulation of lodging houses. In 1884, a royal commission on the H. of the working classes was appointed. Members included Prince Albert and such prominent persons in relation to H. as Sir R. A. Cross, Jesse Collins, Samuel Morley, and W. Torrens; and the chairman was Sir Charles Dilke. The commission recommended increased powers for the enforcement of statutory provisions, compulsory purchase of land, and cheap State loans. *The Housing of the Working Classes Act*, 1885, followed. It consolidated previous Acts, extended the provisions to all urb. areas irrespective of pop., and certain permissive powers were now made compulsory. *The Housing of the Working Classes Act*, 1890, remained the prin. Act



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until 1925. It was noteworthy in gathering into one enactment the triple conception of H. needs, namely (1) the maintenance of the sanitary condition of individual houses; (2) the clearance of insanitary areas; and (3) the provision of new H. accommodation. It contained powers for the compulsory purchase of land.

The Housing, Town Planning, etc., Act, 1909, contained curative methods which were supplemented by preventive measures, and the term 'town planning' found its way for the first time into the title of H. Acts. The First World War added tremendously to the dimensions of the H. problem because the cessation of building led to a banked-up demand for houses after the war. *The Housing, Town Planning, etc., Act, 1919* (Dr Addison's Act), provided the first Exchequer grants. *The Housing, etc., Act, 1923* (Neville Chamberlain's Act), encouraged building by private enterprise for sale. The idea that there would be an infiltration of slum dwellers into the intermediate houses vacated by those who bought the new houses did not materialise in practice; and, eventually, the buying market became satisfied. *The Housing (Financial Provisions) Act, 1924* (John Wheatley's Act), provided for houses to be 'let' with Exchequer grants. *The Housing Act, 1925*, consolidated the legislation on the subject to that date.

The Housing Act, 1930 (Arthur Greenwood's Act), was called the Slum Clearance Act. An innovation was the Exchequer grant 'per person.' *The Ray Committee on Local Expenditure* in 1932 recommended the abolition of all Exchequer grants for H. except those for re-housing slum dwellers on the ground that, because of the reduced cost of interest on loans and other reasons, the cost of building had fallen to a level which did not justify public aid. *The Housing (Financial Provisions) Act, 1933*, carried out this policy, but at the same time provided a new type of grant. *The Moyné Departmental Committee, 1933*, recommended the transfer of local authority houses to house management commissioners in order to remove the administration from the influence of representatives who 'pull strings' for constituents. *The Housing Act, 1935* (Sir Kingsley Wood's Act), provided for the permissive appointment of such commissioners, but it has proved non-effective. This Act was mainly concerned with the problem of overcrowding. A very valuable provision was the power given to local authorities to consolidate

their accounts, which had previously been required to be kept separately for each type of grant, into one H. revenue account (see HOUSING FINANCE).

The Housing Act, 1936, was a valuable consolidation of the law, and was followed by further consolidation in *The Housing Act, 1937* (q.v.), and in 1938.

The Housing (Temporary Provisions) Act, 1944, was passed to deal with some of the H. problems arising out of the war. It authorised subsidies to be paid in respect of houses to meet general needs. It authorised the compulsory purchase of land without the holding of a public local inquiry. *The Housing (Temporary Accommodation) Act, 1944*, made provision for the supply of temporary habitations originally intended to last for 10 years, but under existing conditions they will undoubtedly remain for a much longer period. *The Housing (Temporary Accommodation) Act, 1945*, authorised the minister to issue orders granting permission for the use of open spaces for the erection of the temporary bungalows. *The Building Materials and Housing Act, 1945*, authorised the Minister of Works to purchase building materials and equipment to supply to local authorities for H. purposes. *The Housing (Financial and Miscellaneous Provisions) Act, 1946*, amended the subsidies payable. The keeping of a housing equalisation account was now left to the discretion of the local authority.

The Housing Repairs and Rents Act, 1954, made further provision for the clearance and re-development of areas of unfit H. accommodation and for securing or promoting the reconditioning and maintenance of houses; and otherwise amended enactments relating to H. and the exercise of certain powers relating to land and rent control. Local authorities were required to submit to the minister their proposals for dealing with unfit houses in clearance areas. The provisions for dealing with demolition orders, the reconstruction of a condemned house, and the temporary occupation of houses subject to demolition and clearance orders are dealt with under HOUSING REPAIR (q.v.). *The Requisitioned Houses and Housing (Amendment) Act, 1955*, made provision for the release of requisitioned houses by 31 Mar. 1960, and amended the financial arrangements between the Exchequer and local authorities regarding grants towards deficiencies in respect of requisitioned houses. The right of possession of requisitioned houses is transferred from the minister to local authorities and they are responsible

SOME EXAMPLES OF ENGLISH HOUSING

1. Airey type houses of non-traditional construction in the New Forest; living-room, kitchen, parlour, scullery, 3 bedrooms, bathroom and W.C.; wash-house, fuel store, and second W.C. in outbuilding. 1947.
2. Traditional brick houses in Barrington Road, Worthing (architect, C. Cowles, Voysey, F.R.I.B.A.); living-room, kitchen, 3 bedrooms, bathroom, separate W.C., and outbuilding containing fuel and tool stores. 1947. C.O.I. Crown copyright.
3. Aluminium prefabricated houses at Cheltenham; 2 bedrooms. Hawkey.
4. Houses and flats, Alton Estate, Wandsworth. 1956. London County Council.

for compensation payments. Dwellings become derequisitioned after being vacant for 4 weeks. There are some exceptions. *The Housing Subsidies Act, 1956*, is dealt with under HOUSING FINANCE (q.v.).

The Slum Clearance (Compensation) Act, 1956, dealt with the problem arising where under the severe H. shortage houses were purchased by people for their own occupation which were unfit and therefore due for acquisition for demolition at site value only. Additional compensation is now payable to these owner-occupiers during a period of 10 years if purchased compulsorily. The courts have power to discharge or modify any outstanding liabilities in any of these cases where there is a mortgage, charge, or agreement to purchase by instalments. Compensation on a similar basis is payable to occupiers of business premises in unfit houses compulsorily purchased on or after 13 Dec. 1955. The minister is empowered to make regulations to adjust payments for unfit but well-maintained houses subject to compulsory purchase. Payments may also be made in respect of unfit houses vacant pursuant to a demolition or closing order.

The term *Housing Acts* now refers to: (i) the Housing Acts, 1957 and 1958; (ii) the un repealed temporary financial provisions of Acts which have been left outstanding, i.e. *The Housing (Financial Provisions) Act, 1938*; *The Housing (Temporary Provisions) Act, 1944*; *The Housing (Temporary Accommodation) Acts, 1944 and 1945*; *The Building Materials and Housing Act, 1945*; *The Housing (Financial and Miscellaneous Provisions) Acts, 1946 and 1948*; *The Housing Repairs and Rents Act, 1954*; *The Requisitioned Houses and Housing (Amendment) Act, 1955*; *The Housing Subsidies Act, 1956*; and *The Slum Clearance (Compensation) Act, 1956*.

Closely allied to this legislation are the following Acts: *The Town and Country Planning Acts, 1947 to 1954*; *The New Towns Acts, 1946 to 1958*; *The War Damage Sites Act, 1949*; *The Mineral Workings Act, 1951*; *The Town Development Act, 1952*; and *The Historic Buildings and Ancient Monuments Act, 1953*.

HOUSING AND THE CITIZEN.—While the citizen is entitled to the elementary rights of life, including food and clothing, of which the right to shelter is of paramount importance, he has, at the same time, duties which he is often inclined to forget. He has a right to enjoy the Englishman's common law right to privacy because 'the Englishman's home is his castle'; he also owes to the State, to the community generally, and to his landlord in particular the duty to do all that he possibly can to preserve, to a standard compatible with his environment, the dwelling in which he lives. Some duties of the citizen are set out in the Housing Act, 1957, Part II, and the Public Health Act, 1936, particularly Section 91. Nuisances, especially statutory nuisances, must be prevented. Ultimately, the remedy may

be with the landlord under the Small Tenements Recovery Act, 1838, under which the tenant may be evicted.

Housing and the Landlord.—The properties of private landlords are rapidly falling into disrepair and becoming slums at a rate almost exceeding that at which new houses are being built. As to the amount of rent and security of tenure these properties are controlled by the Rent and Mortgage Interest Restriction Acts. If the increase provided by the Housing Repairs and Rents Act, 1954 (which was not, of course, a percentage increase), is included, rents have increased by 80 per cent to 100 per cent since 1914. During this period the cost of repairs has increased about sixfold. The result is inevitable. There is a steady deterioration in the condition of the properties which no statutory powers with which the local authorities are vested can hope to check. These powers are chiefly under the Housing Act, 1957, to keep properties of certain rentals fit for human habitation, and, under the Public Health Act, 1936, to abate certain statutory nuisances.

CENTRAL AUTHORITIES.—*The Ministry of Housing and Local Government* acting through the *Housing Division*, assisted by the *Central Housing Advisory Committee*, is primarily responsible for H. *The Ministry of Health* is responsible for the prevention of overcrowding under Part IV of the 1937 Act. Other central depts interested in H. include: *The Public Works Loan Commissioners*, who may make advances, particularly to H. associations; *The Ministry of Agriculture, Fisheries, and Food*, who possess an interest relating to the retention of good agric. land; *The Ministry of Works*, who promote the preservation of buildings of architectural and historical interest; and *The Board of Trade*, in respect of the H. of key workers and services in development areas under the *Distribution of Industry Acts, 1945 and 1950*.

The functions of the Minister of Housing and Local Gov. include: the hearing of appeals such as those regarding conditions on development under clearance orders; granting approval to various matters such as to compulsory purchase orders; sanctioning byelaws; authorising revocation of byelaws; imposing conditions for advances for H. accommodation; granting consents such as those regarding overcrowded areas; acting in default of local authorities; making regulations such as those affecting accounts; giving directions such as those for the preservation of amenities; dispensing with the duty of a local authority to publish advertisements and give notices; authorising entry on premises for inspection purposes; making grants to local authorities and H. associations; holding local inquiries. The minister also undertakes research work, including that of the Building Research Station and the Dept of Scientific and Industrial Research.

See also ACCOMMODATION (HOUSING); CLEARANCE AND RE-DEVELOPMENT (HOUSING); HOUSING ACT, 1957; HOUSING

FINANCE; HOUSING REPAIRS; OVERCROWDING, ABATEMENT OF; OVERSPILL.

Housing Act, 1957. This was a very valuable consolidation of the law on housing. It contains 8 parts; 193 sections; and 11 schedules; as below:

Part	Sections
I General provisions as respects local authorities . . .	1-3
II Provisions for securing the repair, maintenance, and sanitary condition of houses . . .	4-41
III Clearance and re-development . . .	42-75
IV Abatement of overcrowding . . .	76-90
V Provision of housing accommodation . . .	91-134
VI Financial provisions . . .	135-142
VII General . . .	143-187
VIII Supplemental . . .	188-193

The schedules are as follows:—

- 1 Compulsory purchase of land under Part II.
- 2 Payments in respect of unfit houses.
- 3 Compulsory purchase of land under Part III.
- 4 Validity and date of operation of certain orders.
- 5 Clearance orders.
- 6 Number of persons permitted to use a house for sleeping.
- 7 Compulsory purchase of land under Part V.
- 8 Local housing bonds.
- 9 Rehousing by undertakers.
- 10 Adaptation of references to enactments in the Housing Acts.
- 11 Repeals.

The Act repeals and enacts in consolidated form the provisions of the earlier Housing Acts, with the exception of financial provisions, which are consolidated in the Housing (Financial Provisions) Act, 1958. Generally, references in this work to the Housing Act, 1936, should be read as referring to the Acts of 1957 and 1958.

The local authorities for purposes of the Act are:—

- (1) In England and Wales: the council of the bor., urb. or rural dist.
- (2) In administrative co. of London:
 - (a) with regard to the City of London: the Common Council.
 - (b) with regard to any other part of the co.: the work is divided between the Metropolitan Bor. Council and the London Co. Council.

The prov. co. councils may: assist rural dist. councils in the provision of accommodation; make contributions to the provision of houses for the agric. pop.; issue local housing bonds; act in default of a rural dist. council; build houses for their employees; make guarantees to building societies; acquire land for housing associations; lend money to local authori-

ties within their area. The Town Development Act, 1952, made provision for prov. co. councils to participate in a development scheme outside the area of a co. bor.

Housing Finance. Local authorities meet the cost of their housing schemes from rents collected from tenants; letting of halls and other properties; investment income; sales of land; some small miscellaneous items; Exchequer grants; and local rates for the balance. Co. councils have been required to make contributions to their dist. councils under certain circumstances. Except where in the form of annuity payments, proceeds of sale of land are capital items and are usually paid into sinking and redemption funds. Where money has been advanced on mortgage there is income from interest; repayments of the sum advanced; and there may be also rents from defaulters' properties taken into possession. As most of the cost of site purchase and building construction is financed by borrowing, there is capital income from loans raised.

These receipts are spent in various ways and according to whether they are capital or revenue items. The former include the cost of raising loans; purchase of sites and buildings; stores and plant; investments; advances to mortgagors; certain grants for improvements; and deferred charges such as grants for well-maintained houses and removal expenses. Revenue items include supervision and management; repairs and maintenance; income tax; rates (chiefly recoverable in rents); insurance; loan charges; and subsidies to housing associations, formerly known as public utility societies.

Housing Loans.—About 75 per cent of the loans of local authorities have been for housing purposes. Loans may be obtained from the Public Works Loan Board, but this is not now compulsory. Borrowing is chiefly by means of mortgages or stock issues. Loans for houses are now almost entirely for the equated period of 60 years. Not only has the cost of building increased considerably, but the burden, and therefore the rent, of houses has been multiplied by the increase of interest charges and also the cost of repairs and management. Incentive bonus schemes can help to lessen building costs by reducing the period of building.

Housing Accounts.—A housing revenue account must be kept. The items to be debited and credited to this account are fixed by statute and regulations, and an ann. return must be made to the Minister of Housing and Local Gov. A housing repairs account must also be kept and a minimum contribution of £3 a house credited to it from the revenue account each year. A housing equalisation account is not now compulsory but may be kept in order to spread the Exchequer grants over the whole of the borrowing period.

Exchequer Subsidies.—The Housing Subsidies Act, 1956, has 3 chief purposes: to reduce the subsidy for general needs with a view to its final abolition; to expedite the

demolition of slums; and to thin out congested areas. The intention behind the grant changes is to encourage local authorities to use existing subsidies as a pool for all purposes and, if necessary, to adjust rents accordingly. It reduced the standard grant in respect of dwellings and flats under 4 storeys to £10 except as stated below. It was intimated that this grant was a temporary one until local authorities could adjust their rent structure to meet a situation in which general grants would not be paid. The minister was authorised to increase the grant up to £30 if he was satisfied there would otherwise be an unreasonably heavy rate charge or where unreasonable high rents would otherwise prevail. For flats over 4 storeys this increase could be £40 regardless of site costs. For dwellings for the agric. pop. an increase of £9 was provided. Where the developed site cost exceeds £4000 an ac., the grant was fixed at £60 an ac., and for each £1000 or part of £1000 in excess of £5000 an ac. an addition of £34 an ac. was made available. This latter provision applies to houses and flats. For flats of 4 storeys or more a scale starting at £20 a flat was provided, increasing with the number of storeys regardless of whether there are lifts or not. For other than general needs this scale was made to start at £32 a flat. For Town Development Act, 1952, houses, an increased subsidy of £24 was provided for a receiving area and for houses urgently required for key industrial workers coming from another area; for pop. decanted into another area because of over-pop. or congestion in a scheme of comprehensive development; and houses provided by a development corporation otherwise than under an authorised arrangement under the Act of 1952. In the case of grants for dwellings for people from congested areas, one-half of the contribution may be recovered by the minister in each of the 10 years following the completion of the houses. The special rate of subsidy for slum clearance, redevelopment, rehousing from camps and other unsatisfactory temporary accommodation, was fixed at £22 1s. 0d. Subsidies for privately built houses for the agric. pop. were reduced to £10 for 40 years.

On 1 Nov. 1956 the Minister of Housing and Local Gov. laid a draft order before the House of Commons abolishing subsidies for general purposes with certain exceptions. For approved 1-bedroomed houses or flats the existing subsidy was continued for the benefit of the aged requiring accommodation. A nominal subsidy of 1s. was made payable in respect of agric. dwellings, previously receiving £9, or not exceeding £2 for extra support against subsidence, or not exceeding £5 for preserving surrounding characteristics, or where there is unreasonably heavy rate burden or high rents. The existing subsidies for slum clearance, overspill, expensive sites, and certain other special purposes remained unchanged.

Housing Repairs. It is the purpose of the *Housing Act, 1957, Part II*, to secure the proper condition of the individual house. Section 4 provides that in determining, for any of the purposes of the Act, whether a house is unfit for human habitation, regard shall be had to its condition in respect of the following matters: (a) repair; (b) stability; (c) freedom from damp; (d) natural lighting; (e) ventilation; (f) water supply; (g) drainage and sanitary conveniences; and (h) facilities for storage, preparation and cooking of food, and for the disposal of waste water.

In any contract for the letting of a house at a rental not exceeding £80 in London and £52 elsewhere, the house must be kept by the landlord during the tenancy in all respects reasonably fit for human habitation. A duty is imposed on the local authority to inspect the houses in its dist. from time to time with a view to ascertaining whether any house is unfit and to keep prescribed records. Where a local authority is satisfied that any house is unfit for human habitation but is capable at reasonable expense of being rendered fit, it must serve upon the person having control of the house (the receiver of the rent or the person who would receive it if let) a notice requiring him within a reasonable time, not being less than 21 days, to execute the works specified for the purpose. In default, the local authority may do the work and recover the cost. There is a right of appeal to the co. court against these requirements. Where the appeal succeeds on the ground that the work cannot be done at reasonable expense, the local authority may purchase the house, but must proceed thereafter to do the work specified in the notice appealed against.

Where any insanitary house is not deemed capable at reasonable expense of being rendered fit for human habitation, the local authority must serve upon the person having control, and the owner, notice intimating that he may attend before the authority and submit any offer with respect to any works or the future use of the house he may wish considered. If they think fit the local authority may accept an undertaking from the owner either within a specified time to render the house fit or that it shall not be used for human habitation until so rendered. If no such undertaking is given, or if given not carried out, the local authority must make a demolition order requiring the vacation of the house and that it shall be demolished. If the order is not obeyed the local authority must demolish the house and recover the net cost from the owner. Where the insanitary dwelling is only part of a building the local authority must make a closing order in lieu of the demolition order.

LOCAL AUTHORITY. — Any local authority that a similar order may be made in respect of an entire house instead of a demolition order where the local authority consider it

expedient to do so because of the effect which the demolition order would have on other houses or buildings.

The Housing Repairs and Rents Act, 1954.—This Act, now incorporated in the Housing Act, 1957 (q.v.), introduced the following modifications:

Power to purchase for temporary accommodation in lieu of demolition orders.—

(1) Local authorities who, under the provisions of the Act, buy houses and bring them to the prescribed standard, pending demolition at a future date, receive Exchequer assistance. (2) A local authority purchasing an individual house may carry out such works as are from time to time required for rendering and keeping it capable of providing such accommodation as aforesaid. (3) Notices of their determination must be served as for a demolition order under Sections 16-32 of the 1957 Act. There is a right of appeal to the co. court. (4) A house may be purchased by agreement or compulsorily if so authorised by the minister; and the Acquisition of Land (Authorisation Procedure) Act, 1946, applies. (5) The compensation payable is calculated in accordance with the Act, 1957: compensation payable for compulsory purchase under that Act of a house unfit for human habitation which cannot be rendered so fit at a reasonable expense is the value of the land as a cleared site.

Power to permit reconstruction of condemned house.—(1) If (a) an owner of a house in respect of which a demolition order has become operative submits proposals to the local authority for the execution by him of works designed to secure the reconstruction, enlargement, or improvement of the house, or of any building of which the house is one; and (b) the local authority is satisfied that the result of the works will be the provision of one or more houses fit for human habitation; then the authority may extend, for such period as it may specify, the time within which the owner of the house is required under the Act of 1957 to demolish it. (2) In order that the said owner may have an opportunity of carrying out the works, the said time may be further extended by the local authority as often as occasion may require. (3) Notice of the determination must be served by the local authority on every person having an interest in the house.

Licences for temporary occupation of houses subject to existing demolition clearance orders.—(1) Powers are given to allow local authorities to license for temporary accommodation any house already subject to a demolition or clearance order before the commencement of the 1954 Act, i.e. 30 Aug. 1954, where they think such house can be 'rescued' temporarily to provide accommodation which is adequate for the time being. (2) While such licence is in force in respect of a house, the section of the 1957 Act 'Recovery of possession of buildings subject to demolition or clearance order' will not apply. (3) The maximum rent specified in any licence

under this section applies to the Agricultural Wages Act, 1948, Section 7. (4) On the revocation of a licence granted under this section, the local authority may, if it thinks fit, revoke the demolition order and purchase and retain the house for temporary accommodation.

See also CLEARANCE AND RE-DEVELOPMENT: HOUSING; HOUSING ACT, 1957; HOUSING FINANCE; TOWN AND COUNTRY PLANNING.

Housman, Alfred Edward (1859-1936), poet and scholar, b. Fockbury, Worcs. Educ. at Bromsgrove School and St John's College, Oxford, he obtained only a pass degree; it was partly this disappointment which gave the strong vein of pessimism to his verse. In 1882 he became a clerk in the Patent Office, but 10 years later he was appointed to the chair of Lat. at Univ. College, London, and in 1911 to the corresponding post at Cambridge. As a scholar his great work was his ed. of Manilius, which is a model of textual criticism and marks him as one of the greatest Eng. Latinists; he also ed. the works of Juvenal and Lucan. As a critic of other people's work he was merciless and vitriolic. But it is as a poet that he is best known to the general public. Three small vols., *A Shropshire Lad*, 1896, *Last Poems*, 1922, and *More Poems*, 1936, along with a vol. of *Manuscript Poems* ed. in 1955, contain his entire output. His lyrics have the clear simplicity of the poems of the GK Anthology, and as a critic has said, 'There were few strings to his lyre, but those strings were nearly all pure gold.' A small book of criticism, *The Name and Nature of Poetry*, embodies his poetic theories. *See* study by his brother, L. Housman, 1937; also F. T. Grant Richards, *Housman, 1897-1936*, 1941; and I. Scott-Kilvert, *A. E. Housman*, 1956.

Housman, Laurence (1865-), dramatist and poet, b. Bromsgrove, Worcs, younger brother of Alfred H. (q.v.). He studied painting at South Kensington, and worked first as an illustrator, then wrote fairy tales and poems illustrated by himself. His first book of verse, *Green Arras*, appeared in 1895, but he first won notice with the anonymous *An Englishwoman's Love Letters*, 1900, which caused a minor sensation. In 1905 he started as a dramatist, and struck out a new line with his *Little Plays of St Francis*, 1922, made up of a large number of playlets, each dealing with one episode in the Saint's life. Another series, telling of Queen Victoria, was refused a licence because of its subject, but in 1937, the centenary of the queen's accession, a group of them with the title *Victoria Regina* was produced in London, while *Happy and Glorious* followed in 1945. H.'s *Palestine Plays* appeared in 1943, and *Cynthia*, a verse pastoral, in 1947. In addition to many other plays H. pub. *Select Poems*, 1909, *John of Jingo*, a satirical novel, and an autobiography, *The Unexpected Years*, 1936.

Houssain, or Hussein, son of Ali and Fatima, *see* HASAN.

work, *The Living Temple*, 1674-1702. See lives by E. Calamy, 1832; S. Dunn, 1836; and R. F. Horton, 1896.

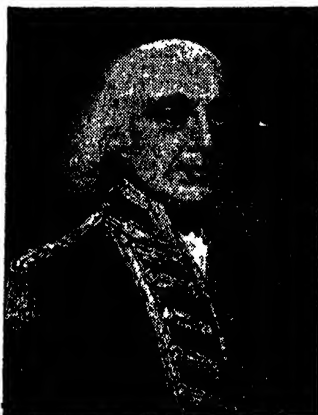
Howe, Joseph (1804-73), Canadian statesman, b. Halifax, Nova Scotia. He became (1828) proprietor and editor of the *Nova Scotian*, to which he contributed many sketches. He was elected to the local parliament, and was instrumental in winning for Nova Scotia a responsible gov., the first of any prov. in Canada. H. was one of the leading personalities in the troubled years (1839-49) of experiment in the evolution of self-rule for Canada. He became famous for his open letters to Lord John Russell. H. was not present at the Charlottetown and Quebec conferences of 1864 which framed the Confederation (at first opposed by him). When the Imperial Gov. refused to annul the Confederation agreement, H. yielded, and subsequently joined Sir John A. Macdonald's first dominion cabinet gov. of Nova Scotia in 1873.

Howe, Julia (née Ward) (1819-1910), Amer. poetess and philanthropist, b. New York. In 1843 she married Samuel G. Howe. With him she ed. the *Boston Commonwealth* (1851-3). She lectured on social subjects, and was active in championing the cause of women, and urging prison and other reforms. She helped to organise the Amer. Woman-Suffrage Association (1869), and in 1872 was president of the New England Women's Club. Her works include: *Passion Flowers*, 1854, 'Battle-Hymn of the Republic', 1862, and other poems, all collected in *From Sunset Ridge: Poems Old and New*, 1898, 2 dramas, and the prose works *Sex and Education*, 1874, *Modern Society*, 1881, *Reminiscences*, 1879-99, 1900, and *Sketches of Representative Women of New England*, 1905. See *They Walk with God*, by her daughter, Laura E. Richards, 1919.

Howe, Richard, 1st Earl (1726-99), admiral, a younger son of Emanuel Scrope H., 2nd viscount H. (Irish peerage). He succeeded a brother as 4th Viscount, 1758. He served with distinction in the Seven Years' war against the Fr. (1756-63), accompanying Boscawen to North America, helping to capture the *Alcide* and the *Lys*, and being present at Quiberon Bay (1759). H. became treasurer of the navy (1765-70). In 1776 he returned to North America as commander-in-chief, and forced the passage of the Delaware, successfully resisting the Fr. under D'Eustaign. He next won fame by his relief of Gibraltar (1782), and returning to England became first lord of the admiralty (1783-8). His most famous achievement was the victory of 'the glorious first of June' (1794) over the Fr. off Ushant. See life by Sir J. Barrow, 1838. See also J. Campbell, *Lives of the British Admirals and Eminent Seamen*, 1779; J. Ralf, *Naval Biographies*, 1, 1826; and T. Anderson, *The Command of the Howe Brothers during the American Revolution*, 1936.

Howe, Stanley Gridley (1801-76), noted Amer. philanthropist, known as 'the

Lafayette of the Greek Revolution' for his services in the Gk War of Independence, 1824-30. Returning to Boston he worked to establish there a school for the blind, becoming director of the Perkins Institute (1832). He was especially successful over the case of Laura Bridgman (q.v.) (1829-89). In 1846 H. concerned himself with the education of idiots and the feeble-minded. He wrote *Historical Sketches of the Greek Revolution*, 1828, and a *Reader for the Blind*. See J. G. Whittier's poem, *The Hero*; J. W. Howe (his wife), *Memoir*, 1876; life by F. B. Sanborn, 1891; and L. E. Richards (ed.), *Letters and Journals*, 1910.



RICHARD, FIRST EARL HOWE

Howe, Sir William, 5th Viscount (1729-1814), soldier of the Amer. Revolution, succeeded his brother Richard as Viscount H. (1799), this Irish peerage becoming extinct on his death. Going to America (1758) he helped in the capture of Louisbourg, and accompanied Wolfe to Quebec. H. returned to Europe (1760), and after holding various commands became major-general (1772). He was again sent to America, commanding the Brit. at Bunker's Hill (1775). Driven from Boston by Washington (1776), he won the battle of Long Is., and entered New York. He later defeated Washington at the Brandywine (1777), and occupied Philadelphia, resigning soon afterwards. See *Narrative of Sir W. Howe*, . . . 1780; and T. Anderson, *The Command of the Howe Brothers during the American Revolution*, 1936.

'Howe,' battleship of the *King George V* (q.v.) class, laid down in 1937 on the Clyde and commissioned in 1942. Her displacement, complement, size, and armament are similar to those of the *Anson* (q.v.).

Howeleke, Johann, see HEVELIUS.

Howell, James (c. 1594-1666), author, b. Wales, son of a clergyman. Educ. at

Oxford, he travelled extensively on the Continent. He was a keen royalist, and was on this account imprisoned in the Fleet from 1643 to 1651. His works include *Dodona's Grove*, 1640, a political allegory, *Instructions for Foreign Travel*, 1642, and the work on which his reputation rests, *Epistolae Ho-Eliauae, or Familiar Letters*, 1655, chiefly written in the Fleet to imaginary correspondents; it is one of the most entertaining books of its time. See W. Vann, *Notes on the Writings of James Howell*, 1924; and E. Bensly, *James Howell*, 1922-7.

Howells, Herbert (1892-), composer, b. Lydney, Gloucester, pupil of Brewer at Gloucester Cathedral in 1909-11 and at the Royal College of Music, with a scholarship, from 1912. He became prof. of composition there in 1920. His works include much church music, choral works (including *Hymnus Paradisi* with solo voices and orchestra), orchestral pieces and concertos, chamber, piano and organ music, and songs. C.B.E., 1953.

Howells, William Dean (1837-1920), Amer. novelist, critic, and poet, b. St Martin's Ferry, Belmont, Ohio, son of Wm Cooper H. He early became journalist in Ohio, was U.S. consul at Venice, 1861-5, and on his return was connected with sev. New York newspapers, and with the Boston *Atlantic Monthly* (1866-81), becoming editor about 1871. H. was the recognised leader of the realistic school, and his works describing familiar incidents and details of ordinary everyday life in America have been both popular and influential. He tried some of the subtlety of Henry James, with a plainer narrative style. He pub. a campaign *Life of Lincoln*, 1860, and *Poems by Two Friends* (H. and J. Platt). Other works are *Venetian Life*, 1866, *Their Wedding Journey*, 1872, *The Lady of the Aroostook*, 1879, *A Modern Instance*, 1882, *A Woman's Reason*, 1884, *The Rise of Silas Lapham*, 1885, *The Minister's Charge*, 1886, *A Hazard of New Fortunes*, 1889, *The Landlord at Lion's Head*, 1897, *Certain Delightful English Towns*, 1906, the farces *Out of the Question* and *The Mouse Trap*, Poems, 1873, 1886, 1895, *Literary Friends and Acquaintances*, 1901, *Heroines in Fiction*, 1901, *Literature and Life*, 1902, *London Films*, 1905, *Between the Dark and the Daylight*, Fennel and Rue, 1908, *Imaginary Interviews*, 1910, *My Mark Twain*, 1910, *New Leaf Mills and Familiar Spanish Travels*, 1913, *The Seen and Unseen in Stratford-on-Avon*, 1914. See J. M. Robertson, *Essays towards a Critical Method*, 1889; H. C. Vedder, *American Writers*, 1894; O. W. Franks, *William Dean Howells*, 1924; and *Life in Letters of William Dean Howells*, by his daughter, Mildred Howells, 1928.

Howell's School, for girls, opened in 1859 on a site in the Vale of Clwyd at Denbigh, North Wales. The trustees are the Drapers' Company.

'Howell's State Trials.' The true originator of this series of 'State Trials' was Cobbett (1762-1835), but they received their present title as T. B. Howell (1768-

1815) ed. vols. i-xxi, 1809-15, and his son T. J. Howell (d. 1858) vols. xxii-xxxiii.

Howitt, Mary, see HOWITT, WILLIAM.

Howitt, William (1792-1879), author, b. Hleanor, Derbyshire. He began to write at an early age, and when he was 13 one of his poems appeared in the *Monthly Magazine*. In 1821 he married Mary Botham, and husband and wife wrote many books in collaboration. He early studied natural science and modern literature and languages, becoming a miscellaneous and prolific writer and very popular. *The Book of the Seasons, or the Calendar of Nature*, 1831, a *Popular History of Priestcraft*, 1833, *Pantilla, or Traditions of the Most Ancient Times*, 1835, and the *Rural Life of England*, 1838, give some idea of his scope. His most successful work was a *Popular History of England*, 1856-62. The literary work of H. and his wife covered poetry, fiction, hist., translations, and social and economic subjects; useful and pleasing in its day, little of it has survived. Mary H.'s autobiography was ed. by her daughter in 1889. See Amice Lee, *Laurels and Rosemary*, 1955.

Howitzer, name applied to a particular piece of ordnance which is of the greatest value in sieges. The word is derived from a Bohemian word meaning a catapult. This particular form of gun has been in fairly general use since the 16th cent. It is a small, light gun which fires a shell at a small velocity but at a steep angle of descent. It has therefore proved invaluable as a means of bombarding trenches and searching low-lying and hidden defences. The First World War occasioned a great development in H.s, and the employment of large pieces by the Germans during the siege of Liège marked a definite advance in construction. The fortifications constructed before the war were no match for the huge weight of projectile used on them, so that when trench-warfare set in, and it was necessary to construct shelters for personnel, gun emplacements, and protection for anything within range, all former specifications of such works required considerable modification to meet the new weapon. Although the Germans had this start of the Allies, the latter took prompt measures to nullify the disadvantage, and in the course of time heavier and heavier H.s appeared in the zone of operations, until the 9.2-in. ('Mother') and the largest, the 15-in. ('Granny'), appeared in 1918. H.s were generally employed against fortifications, dumps, guns, and for cutting wire entanglements.

Howling Monkeys, name given to the species of *Alouatta*, a genus of mammals belonging to the order Primates and the family Cebidae. They are hideous in appearance, having a prominent face and deep jaw, while the tail is long and prehensile. The howling is produced by the unusually developed hyoid bone at the upper end of the wind-pipe, the whole forming a great, hollow, resonant sound-box. These monkeys are common to Central and South America.

2. Cap. of the above dept, on R. Hualaga, 155 m. NE. of Lima. It stands in a lovely and fertile valley, and is a popular resort. Sugar, cotton, coca, cacao, and coffee are handled. H. is an episcopal see, and has an airport. Pop. 13,000.

Huaras, cap. of Ancash dept, Peru, on the R. Huaras, 175 m. NW. of Lima. Elevation 10,000 ft. Andean agriculture and mining. Bishopric. Pop. 12,100.

Huasco, seaport tn in the prov. of Atacama, N. Chile, 2 m. from the mouth of the Huasco R. It is the centre of a fine fruit-growing dist., is noted for its grapes and raisins, and has considerable coasting trade. It is a port for mining products, especially copper. Pop. about 1800.

Hubbard, Elbert Green (1856-1915), Amer. writer and printer, b. Bloomington, Illinois, son of a doctor. He began his 'Bohemian' career as a salesman and then wrote a few poor novels. Visiting Europe, he met Wm Morris and tried to emulate his ideas on printing, decoration and medieval design, producing at E. Aurora, New York, a shoddy imitation of the Kelmescott Press, which he named 'Roycroft,' after the Eng. printer of that name. From this beginning he founded, and wrote the material for, an 'inspirational' monthly magazine, *The Philistine* (1895-1915), which he used to express his homely, often shrewd, platitudinous philosophy. A similar magazine, *The Fra* (1908-17)—a title which he had conferred on himself—never achieved the great popularity of the earlier pub. In 1894 he wrote *A Little Journey to the Home of George Eliot*, the first of his monthly sketches, chiefly biographical, issued in 14 vols., covering 15 years and numbering 170 booklets in all. His chief work, however, is his *A Message to Garcia*, 1899—an essay by which the Cuban lawyer and revolutionary, Calixto Garcia (1836-1898), became widely known in the U.S.A. This he followed by *Loyalty in Business*, 1921. By the close of his life his Roycroft Corporation had become a large estab., from which he pub., besides his own works, many artistic books, hand-illuminated and hand-bound. He went down in the *Lusitania* when she was torpedoed. See A. Lane, *Elbert Hubbard and His Work*, 1901; and F. Shay, *Elbert Hubbard of East Aurora*, 1926.

Hubble, Edwin (1889-1953), Amer. astronomer, b. Marshfield, Missouri, and received his early education at the univ. of Chicago, after which he went as Rhodes Scholar to Queen's College, Oxford, where he took his B.A. degree in jurisprudence in 1912. When he returned to America in 1913 he practised law, but his real interest was in astronomy and he went to the Yerkes Observatory of the univ. of Chicago to do research, being awarded a doctorate for his thesis on 'Photographic Investigations of Faint Nebulae.' After serving with the Amer. Expeditionary Force in the First World War he accepted the invitation of Dr G. E. Hale to join the staff of the Mount

Wilson Observatory, where he carried out extensive research on galactic nebulae and later on extragalactic nebulae. Soon after the end of the Second World War, during which he was Chief of Ballistics and Director of the Supersonic Wind Tunnel Laboratory at the Aberdeen Proving Ground, Maryland, he was appointed chairman of the research committee for the Mt Wilson and Palomar Observatories, and was the first to use the giant 200-in. telescope in the autumn of 1949. H.'s 'Law of the Red-Shifts'—also known as the 'Hubble-Humason Law'—relates to the extragalactic nebulae which, according to this law, are receding from us with velocities proportional to their distances; the constant of proportionality, known as 'Hubble's constant,' is 106 m. per sec. per million light-years. Many honours were awarded H., including the gold medal of the Royal Astronomical Society a short time before his death.

Huber, Johann Nepomuk (1830-79), Ger. theologian and philosopher, b. Munich, where he became a prof. He was leader of the Old Catholics and a bold opponent of the Ultramontanes. His works, *Die Philosophie der Kirchenväter*, 1859, and *Der Jesuitorden*, 1873, were put on the Index. He collaborated with J. Dollinger in writing *Der Papst und das Konzil von Janus*, 1869. See E. Zirngiebl, *Johannes Huber*, 1881.

Huberman, Bronislaw (1882-1947), Polish violinist of Jewish origin, b. near Warsaw. Studied as a child under Joachim, who advanced his interests. In 1894, after sev. public appearances in European caps., he played in London. Made a strong impression on Brahms in Vienna in 1895. Thereafter his life was that of a famous virtuoso. The creation of the Palestine Symphony Orchestra was due to his initiative and was financed by him.

Hübner, St (656-727), patron of hunters. According to a late legend he was hunting on Good Friday when he saw a stag with a cross growing out of its forehead. Recognising this as a sign from heaven, he became a monk and eventually (c. 706) bishop of Maastricht, whence he transferred the see to Liège. His feast is on 3 Nov.

Hubli, tn of Bombay State, India, an important railway centre.

Huc, Evariste-Régis (1813-60), Rom. Catholic missionary, b. Toulouse, educ. by the Lazarists in Paris. In 1839 he was ordained and joined the Lazarist Mission to China at Si-Wang. In 1844 he and Joseph Gabet, his fellow Lazarist (accompanied by a young Tibetan neophyte), were sent into Tibet to determine the extent of the new apostolic vicariate of Mongolia. They spent some time in a Lama monastery, learning the language, and in 1846 reached Lhasa after much danger and difficulty. They were, however, expelled and forced to return to China. H. returned to France in 1852 and pub. sev. books on his journey, the most famous being *Souvenirs d'un Voyage dans la Tartarie, le Thibet, et la Chine*

pendant les années, 1844-46, 2 vols., 1850 (Eng. trans. by W. Hazlitt, 1851, abbreviated by M. Jones, 1859)—a book which contains passages of so remarkable a character as to excite incredulity; but later research seems to have confirmed all that H. wrote. Its supplement, *L'Empire Chinois*, 2 vols., 1854 (Eng. trans., 1859), was crowned by the Academy. *Le Christianisme en Chine*, 4 vols., 1857-8, is an elaborate historical work. All his works are written in a racy and lucid style which contributed to their unusual degree of popularity. See Prince Henry of Orleans, *Le Père Huc et ses critiques*, 1893.

Huch, Ricarda (1864-1947), Ger. authoress, b. in Brunswick. She was educ. at Zürich and took her Ph.D. degree, 1891. In 1897 she was secretary to the State Library Zürich. She married, 1907, her cousin, Richard H., doctor of laws. She pub. vols. of poetry; but most of her work is tales, novels, and hists. or novel-hists.: e.g., *Aus der Triumphgasse*, 1901, *Vita Somnium Breve*, 1902, also *Geschichte von Garibaldi*, 1906-7, *Das Risorgimento*, 1908, *Der grosse Krieg in Deutschland*, 1914, *Der Fall Deruga*, 1917, *Im alten Reich*, 1927-34, *Zeitalter der Glaubensspaltung*, 1937. In literary criticism, *Blütezeit der Romantik*, 1899, *Ausbreitung und Verfall der Romantik*, 1902. She was a bitter opponent of the Nazis, and when Hitler came to power in 1933 she resigned from the Academy of Arts and Sciences. See E. Gillischewski, *Das Schicksalsproblem bei Ricarda Huch*, 1925, and study by E. Hoppe, 1936.

Huchtenburg, Jan van (1646-1733), Dutch battle painter and engraver, b. Haarlem; pupil of Thomas Wyck and later of Van der Meulen in Paris.

Huckleberry, see HILBERRY.

Hucknall, formerly Hucknall Torkard, tn in Notts, England, 8 m. NW. of Nottingham. It has extensive collieries. The body of Lord Byron was brought from Greece and buried in H. par. church, restored in 1873. Pop. 23,350.

Huddersfield, co. bor. in the W. Riding of Yorks, England, at the confluence of the R. Colne and R. Holme, 16 m. SW. of Leeds and served by rail and by canals. H. is situated on the great escarpment of the Lower Coal Measures between 2 entirely contrasting types of scenery—with farming and mining vils. on the E. and SE. and on the W. and S. untamed moors and mosses, mostly uninhabited and rising to a height of 2000 ft.

History.—As a co. bor. and industrial centre H. is relatively a modern tn, but it was mentioned in Domesday Book as *Oderesfeld*, and in Subsidy Rolls, dated 1297, as *Hudersfeld*; until the 19th cent. it occupied a position secondary to that of Almondbury (now one of its suburbs). From the tn itself the prin. eminence seen is Castle Hill (900 ft), crowned by a tower erected to commemorate Queen Victoria's diamond jubilee. The summit is the site of an anct Brit. encampment and is scheduled as a national monument. Almondbury, with its anct church, and old half-timbered premises adjoining, is

much richer in historical associations. The earliest recorded date in connection with Almondbury church is 23 Mar. 1231, when Wm de Notyland was instituted rector of *Almannebere*. The early church was in the Early Eng. style, 1150-1200, and the whole was restored between 1872-7. Almondbury had a weekly market from 1272 to 1672, when powers were granted to the Ramsden family to hold a market in H. A few m. from H. at Kirklee is the reputed grave of Robin Hood. The Three Nuns Hotel stands on the site of an old inn of the same name, a name derived from the presence of nuns at the former Kirklee's monastic estab. over which Robin Hood's sister is said to have ruled as abbess. Near by, at Cooper Bridge, is the 'Dumb Steeple' commemorating the Luddite riots. At Slack, near Outlane, excavations have revealed the remains of a former Rom. camp, and similar work at Castle Hill has brought to light distinct traces of both Rom. and earlier occupation of this hill as a watch tower or camp and fortress.

Among the chief buildings are the par. church of St Peter, the third on the same site. The first was c. 1100, the second 1506, and the present church was built in 1836, in the Gothic style. There are about a score of other estab. churches in the tn and immediate neighbourhood and numerous Nonconformist places of worship. The tn hall and municipal offices are virtually one large handsome block. The hall is in neo-classical style and beautifully decorated. Ravensknowle Hall (with grounds), Dalton, presented to the tn in 1919 by Legh Tolson for a museum and park, was built in 1860 by John Beaumont of Dalton. Parts of the original Cloth Hall (demolished in 1930), including the pillars, clock tower, and doorway, have been re-erected at Ravensknowle Park. Attached to the Tolson Memorial Museum is a meteorological station. There is a central library and 7 branch libraries. The art gallery contains many engravings by J. M. W. Turner. The foundation stone of the present market hall was laid in 1878; it is built in decorated Gothic. The technical college began in 1841 as the Young Men's Mental Improvement Society; the memorial stone of the present building was laid in 1881. In 1905 the college became affiliated with Leeds Univ. There are 6 secondary schools, and primary schools are distributed throughout the bor. At what is now the H. College (Municipal Boys' School) the late earl of Oxford and Asquith, then H. H. Asquith, received his early education, he being a nephew of a former freeman of the bor.

Most of the residential areas are within a m. or two from the tn, e.g. the suburbs of Fartown, Sheepridge, Birkby, and Fixby, and the semi-rural dists. of Crosland Moor and Almondbury. The main sections of local industry are textiles, engineering, cloth dyeing, shrinking, and finishing, manuf. of chemicals and dye-stuffs, and wholesale tailoring. H. and the adjoining dists. are a natural centre of

the woollen and worsted fabric industry of the W. Riding of Yorks, and in the Colne Valley many of the larger mills produce millions of yds of cloths and tweeds. There are also numerous other trades carried on, notably printing and bookbinding; machine and hand tools; wood-working; sheet-metal working; furniture and cabinet making; rubber fittings; auxiliary textile equipment; brewing; patent glazing; dyeing; pottery; tanning and leather goods; boot and clog making; coach and motor-body building; galvanised metal goods; brick and clay ware; aerated waters; sports requisites (especially footballs in great quantities); confectionery; hosiery yarns; gas-producing and coking by-products plant; paint; carpets and rugs; carrier bags; cardboard boxes; jams and preserves; pre-cast cement; constructional and building industries. There is a bor. council of 60 members, and H. returns 2 members to Parliament. Pop. 129,021.

Hudnall Common, open space of 116 ac. (National Trust), situated near Ashridge Park (Herts) and Whipsnade (Beds), and noted for its birds and flowers.

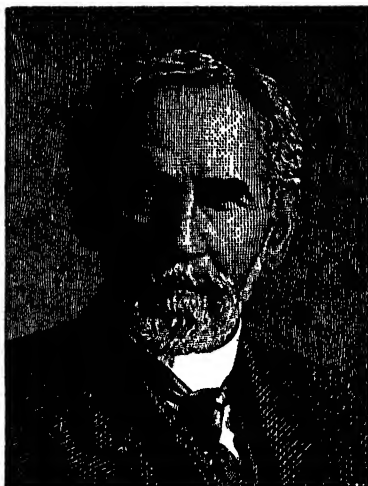
Hudson, George (1800-71), railway promoter, 'the Railway King,' b. Hows-ham, Yorks. He started life as a linen draper, but in 1828 inherited a fortune of £30,000. This allowed him to interest himself in railway promoting, with very successful results, and he became the dictator of railway speculation. But the railway crisis of 1847-8 proved his ruin, for he was accused of fraud. Carlyle alluded to him as 'the big swollen gambler.'

Hudson, Henry, the Navigator (d. 1611), Eng. explorer. Little is known of him save his 4 voyages, 1607-11, in search of the NE. and NW. Passages. He visited Spitsbergen, Novaya Zemlya, North America, and the Canadian Arctic. Hudson Bay and Strait are named after him. G. M. Asher ed. the documents relating to H. for the Hakluyt Society in 1860; see also lives by L. Powys, 1927, and J. M. Scott, 1950.

Hudson, John (1662-1719), Eng. classical scholar, who ed. anc. writings. He graduated at Univ. College, Oxford, 1681, later became fellow, and in 1701 was appointed keeper of the Bodleian Library. Also principal of St Mary Hall, Oxford.

Hudson, William Henry (1841-1922), Brit. field-naturalist and author, b. Rio de la Platta State, Buenos Aires—now absorbed in Argentina; son of Daniel H., native of Marblehead, Massachusetts, and grandson of Daniel H., native of Exeter, England. The early part of his life was spent on an estancia of the Argentine pampas. H. left South America, 1869, and thenceforth resided in England. His wife, a musician (d. 1921), was much older than himself; they lived in various houses in London, went on long gipsy-like journeys into the country, and were sometimes in want. In 1901 H. was granted a Civil List pension, which he relinquished when his circumstances improved. H. 'writes as the grass grows.' He saw life

as an immense and complex flow of creativeness, and in describing nature, and especially bird life, he evolved a style that has been a model for this century. His observation combined scientific detachment with intense intuitive perception. 'Few men have left a monument more permanent than Hudson left in his own books,' wrote Cunningham Graham. His works, which fall roughly into the 2 categories of S. America and England, include *The Purple Land which England Lost* (i.e. Uruguay), 1885, *A Crystal Age* (satire on peaceful Utopias), 1887, *A Naturalist in La Plata*, 1892, *Idle Days in*



W. H. HUDSON

Patagonia, 1893, *British Birds*, 1895, *Nature in Downland*, 1900, *Birds and Man*, 1901, *El Ombú*, 1902, *Hampshire Days*, 1903, *Green Mansions*, 1904, *A Little Boy Lost*, 1905, *The Lund's End*, 1908, *Afoot in England*, 1909, *A Shepherd's Life*, 1910, *Far Away and Long Ago*, 1918, *Birds of La Plata*, 1920, *Dead Man's Plack and An Old Thorn* (stories in 1 vol.), 1920, *A Traveller in Little Things* (sketches), 1921, and *A Hind in Richmond Park*, 1922. He d. in London and is commemorated by the Bird Sanctuary with Epstein's 'Rima' (after the bird-woman in *Green Mansions*) in Hyde Park. See life by M. Roberts, 1924; also F. Rhys, *W. H. Hudson, Rare Traveller*, 1920; R. Charles, *The Writings of Hudson*, 1935.

Hudson: 1. Cap. of Columbia co., New York, U.S.A., on H. R., 28 m. S. of Albany. It has a large riv. trade and numerous manufs. of engines, paper, leather, flour, clothing, knitted goods, tobacco. Founded in 1783, H. was formerly a whaling and sealing port. Pop. 11,500.

2. Riv. of New York and New Jersey, U.S.A. Rises in the Adirondack Mts, and flows about 315 m., roughly in a southerly direction, into New York Bay. Its estuary, known as N. R., forms part of New York Harbour. It is navigable for small steamers to Troy (151 m.), and for large steamers to Albany. Much of the scenery on its banks is very fine, especially in the highlands of the H., part of the Appalachian Range, below Newburgh. Chief tribes: the Mohawk, Walkill, Hoosic, and Sacondaga. It was first explored by Henry Hudson in 1609, and the first successful Amer. attempt at steam navigation was made upon it in 1807.

Hudson Bay, or Canadian Sea, inland sea of the NW. of North America, communicating with the Atlantic Ocean by Hudson Strait and with the Arctic Ocean by Fox Channel, Fury and Hecla Strait, and the Gulf of Boothia. It lies entirely in Brit. ter., having Manitoba on the W., Ontario on the S., and Southampton Is. on the N. A long narrow arm in the S. is known as James Bay. Area about 500,000 sq. m., length 850 to 1300 m., greatest width 600 m. It occupies a basin in the old Laurentian area, and is mostly shallow, with low shore-lines, especially in the S. and W. The average depth is 70 to 100 fathoms. The E. shores are rocky, and steep bluffs occur there and occasionally in the W. A chain of small is. lies off the E. shore. There are few submerged rocks or shoals, but ice renders navigation impossible for three-fourths of the year. The climate is very rigorous in winter, but mild and pleasant during the short summer. The bay is the great drainage area of the Canadian NW. Ters., and is fed by the R.s Churchill, Nelson, Albany, Main, Rupert, Severn, and Moose. There are fisheries of salmon, seal, whale, and walrus, and the surrounding country is rich in minerals and fur-bearing animals. York Factory is the chief port. The bay was discovered by Henry Hudson in 1610. He wintered in James Bay, and the next year was abandoned by his mutinous crew. See F. H. Kitto, *The Hudson Bay Region*, 1929.

Hudson Bay Territory, see NORTH-WEST TERRITORIES.

Hudson's Bay Company, Eng. chartered company incorporated by Charles II in 1670 and founded by Prince Rupert and other adventurers for the purpose of trading with the North Amer. Indians on the shores of Hudson Bay. The estab. of the Amer. fur trade seems to have been due to the demand in the European mkt for large felt hats adorned with fur which became the vogue from the time of Charles I. In the search for the NW. Passage Henry Hudson, by discovering the bay which is named after him, had found a route to the very edge of what is the greatest fur forest in the world. But Hudson d. without being aware of what he had accomplished. It remained for the Sieur Médart des Groseillers and his brother-in-law, Pierre Radisson, and

through them the founders of the H. B. C., to reveal the value of his discovery for the fur trade. The first achievement of Groseillers, an Indianised Frenchman, was to penetrate to the Great Lakes and induce the Hurons to bring furs down to the St Lawrence. It was then that he found that the Cree of the great N. forest were the real source of the fur supplies which reached the Fr. in the S. The Fr. governor refused to issue to Groseillers a licence to journey thither, except on the condition that he received half the profits. Groseillers and Radisson therefore went independently and returned (c. 1663) with a great supply of furs and were then charged and fined for illicit trading. Failing to obtain redress in France the 2 men repaired to Boston to visit Sir George Carteret, Privy Councillor to Charles II, and through him they ultimately reached Windsor as guests of the king, who was equally interested in their proposals for a trading expedition in North America beyond the confines of England's Amer. colonies. But progress was slow, and it was not until 1667 that Prince Rupert, the king's cousin, took up the project, with the co-operation of the duke of York (afterwards James II), the duke of Albemarle, the earls of Arlington, Craven, and Shaftesbury, Sir George Carteret, and James Hayes, secretary to Prince Rupert. All these were the original subscribers to the initial cap. of about \$110,000 and the company's hist. really begins at that date, when a converted ketch, the *Nonsuch*, with Groseillers, sailed for North America, reaching James Bay on 29 Sept. 1668. The king loaned the naval ship *Esqet* which sailed with Radisson, but at Hudson Strait the *Esqet* was too damaged to proceed further. In St James's Bay Groseillers then built Fort Charles—really only a poor log hut with a stockade, yet veritably the cornerstone of a great trading empire. Groseillers (called Mr Gooseberry by the Eng.) soon sailed again with the *Nonsuch* laden with furs. This successful voyage confirmed the hopes of the courtier adventurers, who now applied to the king for a Royal Charter. This was granted on 2 May 1670. Wide imperial powers were conferred on 'the Governor and Company of Adventurers of England Trading into Hudson's Bay.' Rights to 'sole trade and commerce' within the entrance of Hudson Strait were bestowed by Charles upon 'our dear and entirely beloved cousin Prince Rupert' and his associates, who, according to the Charter, were to be 'the true and absolute Lordes and Proprietors' over more ter. than was then known even to Europeans. In present-day geographical terms, the Adventurers were granted the provs. of Ontario and Quebec N. of the Laurentian Hills and W. of Labrador boundary, all Manitoba and Saskatchewan, the S. half of Alberta, and the SE. corner of the NW. Ters. It proved to be a well-drafted Charter, for it successfully resisted all attacks on its validity in the law courts. The Fr. in Quebec and Montreal soon took up the

committee (1857), and it was as a result of this inquiry that Vancouver Is. was made a crown colony. Sir George Simpson was one of the prin. witnesses at the inquiry, and among the members of the committee were Wm Ewart Gladstone, Lord Stanley, and Lord John Russell. Celebrated explorers and travellers, including John Ross, Col. Lefroy, Sir John Richardson, and Dr Rae were among other witnesses, and the committee's report, which was adopted by Parliament, found that Canada's wish to assume the land of the W. for settlement was reasonable and that arrangements should be made for their cession to Canada; and that where settlement was impracticable, the H. B. C. should remain in control.

Thus the end of the company's monopoly was in sight. Sir George Simpson d. in 1860 but the company carried on as rulers of the W. under the Crown until 1869. When Confederation became a political reality, it was evident that the end of the company's administration of Rupert's Land was approaching and provision was made by the Brit. North America Act of 1867 (clause 146) for the admission of that ter. (then the company's land) and the NW. Ters. (crown domain) into the Confederation. The Rupert's Land Act of 1868 laid down the procedure. Under the ensuing agreement Canada paid £300,000 as compensation and one twentieth part of the land in any township settled within the fertile belt. By the Deed of Surrender of 1869 the company did not give up its Royal Charter but only certain of its trading privileges. The final transfer of land to the company, under this deed, was not completed until 1925, or 56 years after the date of surrender, under which the company was allowed the privileges of a private trading corporation without hindrance or exceptional taxation. The Deed brought to the company an area in the fertile belt of 7 million ac. Tns and cities grew up in many of the fur-trading areas and the company's posts in numerous places have become departmental stores. By 1934 2,000,000 ac. scattered through Manitoba, Saskatchewan, and Alberta remained unsold. The Land Dept of the company administers this huge estate which includes extensive lots in city areas. The company's title to the land it offers for sale is direct from the Crown and is therefore guaranteed by the Prov. and Dominion Govs. By 1869, indeed, the charter of 1670, which had served its purpose for 200 years, had outlived its time. In 1863 the International Financial Society had secured enough stock to control and reorganise the company and up to 1920 there had been 5 supplemental charters regularising changes in dealings with the company's stock and reflecting the actual business carried on by the company. With the outbreak of the First World War the H. B. C. was called upon to engage in activities far greater than at any time during its hist., including, e.g. the organisation of steamship services for the transport of goods to

France, and during 1915-19 it handled some 13,000,000 tons of supplies and operated over a million tons of shipping.

The H. B. C. continues to conduct its business under a Royal Charter and is therefore exempt from the provisions of the Companies Act of Great Britain. A governor, deputy-governor, and committee (or board of directors) have directed the company's affairs in unbroken continuity since the incorporation. To-day this executive group of 9 is elected by the proprietors at the ann. general court. The Board meets regularly in Beaver House, London, adjoining which is the church of St Ethelburga the Virgin within Bishopsgate (c. 1400-50) where Henry Hudson received communion on 19 April 1607 shortly before sailing on his first voyage of discovery. Since 1931 the company's affairs in Canada have been under the administration of a Canadian committee. Before that time the committee served in an advisory capacity. The Canadian committee is responsible to the governor, deputy-governor and committee; it meets in Hudson's Bay House, Winnipeg, where it maintains its offices as a central organisation in Canada. Hudson's Bay House, Winnipeg, is also the H.Q. of the 4 Canadian Depts of the company—the Fur Trade, Transport, Land and Dept Stores. (See *Hudson's Bay Company. A Brief History*, issued by Hudson's Bay Company, London, 1935.)

See A. Mackenzie, *Voyages from Montreal on the River St Lawrence Through the Continent of North America to the Frozen Ocean and the Pacific in the years 1789 and 1793*, 1801; W. Irving, *Astoria; or Enterprise Beyond the Rocky Mountains*, 1836; J. Dunn, *History of the Oregon Territory and British North-America Fur Trade*, 1844; A. Simpson, *Life and Travels of Thomas Simpson, The Arctic Discoverer*, 1845; Sir G. Simpson, *Narrative of a Journey Round the World During the Years 1841 and 1842*, 1847; A. Ross, *Fur Hunters of the Far West*, 1855, and *The Red River Settlement: Its Rise, Progress and Present State*, 1856; B. Milton and W. Cheadle, *The Northwest Passage by Land*, 1865; A. Begg, *The History of the North-West*, 1895; W. Beckles, *The Great Company; Being the History of the Honourable Company of Merchant Adventurers Trading into Hudson's Bay*, 1900; F. V. Holman, *Dr. John McLoughlin, the Father of Oregon*, 1907; R. H. Coats and R. E. Gosnell, *Sir James Douglas (The Makers of Canada series)*, 1908; G. Bryce, *The Remarkable History of the Hudson's Bay Company*, 1910; S. Hearne, *A Journey from Prince of Wales's Fort in Hudson's Bay to the Northern Ocean* (with notes by J. B. Tyrell), new ed. by the Champlain Society, 1911; I. Cowie, *The Company of Adventurers*, 1913; Sir Wm Schooling, *The Hudson's Bay Company 1670-1920* (pub. by the H. B. C., London), 1920; C. H. Carey, *History of Oregon*, 1922; Florence L. Bowman and Esther J. Roper, *Traders in East and West*, 1924; and *Journal of*

Henry Kelsey 1691-1692 (with notes by C. N. Bell), 1928; F. W. Howay, *British Columbia: The Making of a Province*, 1928; *The Kelsey Papers* (introduction by A. G. Doughty and C. Martin), 1929; H. J. Moberley and W. B. Cameron, *When Fur was King*, 1929; J. B. Tyrell (ed.), *Documents relating to the Early History of Hudson Bay* (reprinted by the Champlain Society), 1931; J. Knight, *The Founding of Churchill: Being the journal of Captain James Knight, Governor-in-chief of Hudson Bay from 14 July to 13 Sept. 1717* (ed. by J. F. Kenney), 1932; J. McLean, *Notes on a Twenty-five Years' Service in the Hudson's Bay Territory* (reprinted by Champlain Society, ed. by W. S. Wallace), 1932; R. C. Johnston, *John McLoughlin, Patriarch of the North West*, 1935; D. MacKay, *The Honourable Company. A History of the Hudson's Bay Company*, 1937. L. H. Tharp, *Company of Adventurers*, 1949; P. H. Godsell, *Arctic Trader: The Account of Twenty Years with the Hudson's Bay Company* (2nd edition), 1951.

Hue, former cap. of Viet Nam (q.v.) and site of the citadel of the Nguyen emperors. After the div. of Viet Nam into 2 self-governing halves at the beginning of the 17th cent. H. became the cap. of the Nguyen emperors of Cochinchina (q.v.). Captured by the Tonkinese in 1775, H. was recaptured by the Nguyen in 1801, and in 1804 became the cap. of a reunited Viet Nam. The treaty establishing the Fr. protectorate was signed at H. in 1887. H. was finally abandoned by the emperor Bao Dai (q.v.) in 1945 and ceased to be the cap. The imperial palace and citadel remain intact, but the city has been in decline since the departure of the court. H. stands on the H. R., some 10 m. from the sea. Its pre-war pop. of 15,000 has decreased considerably. See *Bulletin des Amis du Vieux Hue*.

Hue and Cry, old phrase derived from the method of pursuit of felons by the general public, as provided for in common law. Also the title of a gazette containing the names of deserters, persons charged with crimes, etc., pub. in 1710.

Hueffer, Ford Madox, see FORD, F. M.

Huehuetenango, cap. of H. dept. W. Guatemala, 80 m. NW. of Guatemala city. It is the centre of a lead-mining dist., and quite near are the ruins of an old Indian city, Zaculen. Pottery, leather, wool, and flour are produced. Altitude 6150 ft. Pop. 6000.

Huelva: 1. Sp. prov., in Andalucía (q.v.). It is the most S.-westerly prov. of Spain, is on the Portuguese frontier, and is washed by the Atlantic. Much of the surface is occupied by spurs of the Sierra Morena (q.v.), and it is watered by the Tinto (see RÍO TINTO), the Odíel, and tribs. of the Guadiana (q.v.) and the Guadalquivir (q.v.). There are rich deposits of iron and copper pyrites, and some dists. are very fertile. Area 3900 sq. m.; pop. 368,400.

2. Sp. tn, cap. of the prov. of H., situated on the Atlantic coast on a small

peninsula formed by the junction of the Tinto and the Odíel. Its port is in the Odíel estuary. H. has some old buildings, but is, in general, a modern tn. It has fisheries, and is the outlet for the copper of the Río Tinto (q.v.) mines. It ships also iron, manganese, wine, and fruits. Pop. 65,500.

Huerco-Overa, Sp. tn in the prov. of Almería, in an important mining dist. It has an agric. market. Pop. 17,200.

Huerta, Adolfo de la, governor of the Mexican prov. Sonora when it seceded, April 1920. When revolution, of which he was a leader, displaced Carranza on 23 April, H. became provisional president of Mexico: confirmed in office (after Carranza's assassination) 24 May. He was only a stop-gap, Obregón being inaugurated in Dec. He led a rebellion against Obregón from Veracruz, and in Feb. 1924 went into permanent exile in the U.S.A.

Huerta, Victoriano (1854-1916), Mexican president and generalissimo, b. at Colotlan of Indian parents, educ. in the Military College, Mexico City, as a result of the interest taken in him by Juárez, the Mexican President. H. became a lieutenant of Engineers in 1877, after a most successful career in the college. On active service in various parts of Mexico 1878-1912, he was promoted to the rank of general in 1901. His prin. service during this period was to suppress the Chihuahua rebellion in 1912. Made military commandant of the Federal Dist. in Mexico City in 1913. When Lascurain resigned, H. became interim president. At this time his old enemy, the ex-President Madero, who was awaiting trial for treason, was, together with Suárez, the ex-vice-president, murdered while being conveyed to the penitentiary. For this act, which may or may not have been instigated by him, H. incurred the utmost odium throughout the U.S.A. and his protracted conflict with America may be said to have begun from that date (Feb. 1913). Gen. Carranza, aided by Gen. Villas, headed rebellions against him after he had been confirmed in office. No efforts on the part of President Wilson at mediation were successful in reconciling the insurgents with H., whose ruin was completed by his own folly in repudiating the National Debt and thereby precipitating a state of anarchy and disorder which was only remedied by active Amer. intervention. He resigned in the summer of 1914, just before the beginning of the First World War, in which the only part he played was to endeavour to lead a revolutionary force into Texas. He d. a prisoner in Fort Bliss.

Huesca: 1. Sp. prov., in Aragón (q.v.), on the Fr. frontier. It is very mountainous and contains the highest peak in the Pyrenees (Aneto, 11,170 ft). Area 5845 sq. m.; pop. 237,400.

2. (Rom. *Oesa*; later *Vechea*) Sp. tn, cap. of the prov. of H., on the Isuela in the valley called the 'Hoya de H.' Sertorius (q.v.) estab. here the first univ. in Spain, and here he was murdered in 72 BC. The

tn was taken by the Carlists (q.v.) in 1837, and it suffered during the Civil war of 1936-9. It has a fine Gothic cathedral, partly 13th cent., sev. other old churches, and the remains of its medieval castle and walls. There are chemical, sugar, and wine manufs. Pop. 23,350.

Huescar, Sp. tn in the prov. of Granada, with woollen manufs. Pop. 8000.

Huet, Pierre Daniel (1630-1721), Fr. scholar and churchman, b. Caen. In 1652 he visited the Swedish Court in company with Bochart, and discovered at Stockholm the famous Origen MS., which he ed. in 1668. In 1670 he and Bossuet were appointed tutors of the Dauphin, and prepared an ed. of the classics for their pupil's use. H. took orders in 1676; became abbot of Aunay, 1678, bishop of Soissons, 1685, bishop of Avranches, 1692, and abbot of Fontenay, 1699. In 1701 he settled in the Jesuit College in Paris. His works include *De Interpretatione*, 1661, a collection of poems, 1664, *Demonstratio Evangelica*, 1679, *Traité de la Faiblesse de l'Esprit Humain*, pub. posthumously, 1723, etc.

Hügel, Baron Friedrich von (1852-1925), Rom. Catholic religious writer, b.

her teaching and doctrine. Everything he did was 'to be according to the mind of the Church.' Works include *The Mystical Element of Religion*, 1908-9, *Eternal Life*, 1912-13, *The German Soul*, etc., 1916, *Essays and Addresses on the Philosophy of Religion*, 2 vols., 1921, 1926, *Reality of God and Religion and Agnosticism*, 1931. See B. Holland (ed.), *Selected Letters, 1896-1924*, 1927; Gwendolen Greene (ed.), *Letters to a Niece*, 1928; Algar Thorold (ed.), *Readings from Friedrich von Hügel*, 1928; M. de la Bedoyère, *Life of Baron von Hügel*, 1951.

Hugglescote, par. and vill. in Coalville urb. dist., Leicestershire, England, 6 m. SE. of Ashby-de-la-Zouch. Collieries are in the adjoining vill. of Ellistown. Pop. 6500.

Hugh Capet, see CAPET, HUGH.

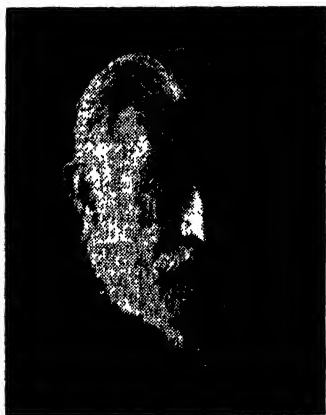
Hugh of Lincoln, or Avalon: 1. (c. 1135-1200), Eng. saint, b. at Avalon, Burgundy; entered the Grande Chartreuse about 1160. He became procurator there and was invited to England by Henry II to establish at Witham, Somerset, the first Eng. Carthusian monastery. In 1186 he became bishop of Lincoln; in 1189 he went on an embassy to France; in 1194 he excommunicated King John, and in 1189 led the first refusal of a money grant. He was canonised in 1220. He rebuilt much of Lincoln Cathedral. The chief life of St H. is the *Magna Vita S. Hugonis* (in MSS. in the Bodleian Library), written by Adam, private chaplain to St H. See life by J. Clayton, 1931.

2. (c. 1246-55), Eng. Christian child who is traditionally alleged to have been crucified by a Jew of Lincoln, named Copin, on account of his faith. What- over the origin of the story, the version in its final form is almost certainly exaggerated and distorted. The story is the theme of the 'Prioress's Tale' in Chaucer's *Canterbury Tales*, and is also referred to by Marlowe.

Hugh Town, tn and cap. of the Scilly Isles, Cornwall, on St Mary's Is.

Hughenden, par. of Buckinghamshire, England, 1 m. N. of High Wycombe. H. Manor, the residence of Disraeli (see BEACONSFIELD) from 1839 until his death in 1881, is the property of the National Trust (q.v.) and houses many Disraeli relics. Disraeli was buried in H. par. church which contains a monument to him erected by Queen Victoria. Pop. 3250.

Hughes, Charles Evans (1862-1948), Amer. lawyer and statesman, b. Glen Falls, New York, and educ. at Colgate and Brown Univs., and the Columbia Law School. In 1905 he won prominence as the attorney for the Armstrong Legislative Committee, which investigated the methods of the life insurance companies incorporated under the laws of New York. H. became the candidate of the Republican party for governor of New York. He was elected in 1906, and re-elected in 1908. In 1910 President Taft appointed him an associate justice of Supreme Court. In 1916 the Republican party nominated him for the presidency,



BARON VON HÜGEL

Florence. His father was Baron Karl von H., and his mother was Scottish. Baron Karl was Austrian minister at Brussels, 1860-7. Friedrich was never at school or univ.; an attack of typhus in 1871 left him deaf. He received instruction from the historian Reumont, was influenced by Abbé Huvelin and W. G. Ward. He became a naturalised subject of Great Britain during the First World War, and was foremost among the Catholic scholars in England of his time. Although at one time suspected of Modernism and certainly liberal in thought, he was nevertheless loyal to the Church, his whole life and practice being inspired by

and he at once resigned from the U.S. Supreme Court and began a vigorous campaign, but, in spite of carrying most of the New England states, failed to be elected. He then returned to the practice of the law in New York, where, upon the U.S.'s entry into the war, he acted as member of the draft appeal board and took charge of an inquiry into aircraft. In 1921 Harding made H. secretary of state. The most notable event of his term was the arms conference held in Washington in Nov. 1921. As president of that conference he did much to bring about an agreement that led to a closer understanding between the U.S.A. and Great Britain. There was also the 4-power treaty between the U.S.A., Great Britain, France, and Japan regarding their is. possessions in the Pacific, and the cancellation of the Anglo-Jap. alliance. H. held on as secretary of state for a time under President Coolidge and then resigned to resume the practice of law. He was Judge of the Permanent Court of International Justice, The Hague, 1928-1930; President of the Amer. Society of International Law, 1925-39; and Chief Justice of the U.S.A., 1930-41. An impartial judge, he found himself compelled, like his associates, to declare invalid and unconstitutional a great number of the laws passed by Congress at the instance of President Franklin Roosevelt as parts of the 'New Deal.' He pub. *The Pathway to Peace*, 1925, *The Supreme Court of the United States*, 1928, and *Pan American Peace Plans* (Yale Univ. Lectures), 1929. See Merio T. Pusey, *Charles Evans Hughes*, 1951.

Hughes, David Edward (1831-1900), Anglo-Amer. inventor, b. London; went to Virginia in 1837; in 1850 became prof. of music at Hardstown College, Kentucky. His inventions include an improved telegraph type-printer (1854-5) and the microphone (1878), which was produced almost simultaneously by Lüdgtge. F.R.S., 1880.

Hughes, Sir Edward (c. 1720-94), admiral, b. Hertford, and entered the navy, 1735. He assisted in the attacks on Cartagena and at the taking of Louisburg and Quebec. He became commander-in-chief in the East Indies, 1773. During 1782-3 he had 5 encounters with the Fr., and was made admiral in 1793.

Hughes, Hugh Price (1847-1902), Wesleyan minister, b. Carmarthen; educ. for Wesleyan Methodist ministry at Richmond College. In 1884 he became prominent in London at Brixton Hill as a leader of the 'Forward party,' and in 1886 started the W. London Mission. In 1885 he became editor of the *Methodist Times*, in 1896, first president of the National Council of the Evangelical Free Churches, and in 1898 president of the Wesleyan Methodist Conference. See life by his daughter, 1904.

Hughes, John (1677-1720), poet, b. Marlborough, Wilts. Educ. in London, he became a clerk in the Ordnance Office. He was delicate, and suffered much from poverty till his appointment as secretary

in the Court of Chancery. His best work, *The Siege of Damascus*, was produced at Drury Lane Theatre, 1720, but he d. the same evening from consumption. Besides his poems, he wrote a *History of England*, 1706, *The Works of Mr. Edmund Spenser*, 1715, and contributed to sev. periodicals. Johnson included him in his *Lives of the Poets*.

Hughes, John (fl. 1869), Welsh iron and shipbuilding master. After his apprenticeship in Ebbw Vale, Wales, he estab. a factory at Newport, then directed a Millwall iron and shipbuilding yard and made the Millwall shield, a resistant armour which interested Russia. He toured the Russian mines, and, in 1869, founded a company, the New Russian Metallurgical Company, to supply all Russian railways with iron. Before the 'Hughes works' were set up at Hughesovka or Yuzovka, ultimately renamed Stalino (q.v.), with 3000 men employed, there had been a vast steppe with primitive peasants and 'tchumaks' or carriers driving bullocks for grain transport. The H.s. father and sons, came to the Don country, and production at their works soon outstripped the Urals of those days with its many iron-works.

Hughes, Richard Arthur Warren (1900-), novelist, b. Weybridge, Kent, of Welsh descent. Educ. at Charterhouse and Oriel College, Oxford, he wrote *The Sister's Tragedy* (play) and *Gipsy-Night* (and other poems), both pub. in 1922. These were followed by *A Comedy of Good and Evil*, 1925, and *Confession Juvenis* (collected poems), 1926. H. was the first dramatist to write specially for broadcasting and he has been associated with the Welsh National Theatre. He is, however, best known for 2 novels: *A High Wind in Jamaica*, 1929, and *In Hazard*, 1938, the first-named being notable for its original narrative style and for its convincing interpretation of child mentality; the second, a vivid story of a ship's adventures in a hurricane. Other works are *A Moment of Time* (short stories), 1926, *Collected Plays*, 1928, *The Spider's Palace* (stories for children), 1931, *Don't Blame Me*, 1940, *City of Angels*, 1941, and *Her Fabulous Fortune*, 1943. During the Second World War he worked at the Admiralty and received the O.B.E.

Hughes, Sir Sam (1853-1921), Canadian general, b. Darlington, Ontario. Educ. at Toronto Normal School and Univ. In South African War he was assistant inspector-general of communications; afterwards chief intelligence-officer to Sir Charles Warren. In 1911 he was appointed minister of militia and defence; and he had a great deal to do with preparing the Canadian forces that fought in the First World War. K.C.B. and major-general, 1915.

Hughes, Thomas (1822-96), novelist, b. Uffington, Berks. Educ. at Rugby and Oxford, he studied law and was called to the Bar in 1848. He was a founder of the Working Men's College, and principal of that institution from 1872 to 1883. He sat in Parliament from 1865 to 1874, and was a co. court judge from 1882. The

author of sev. books and many tracts and essays, his fame rests entirely upon *Tom Brown's School Days*, pub. anonymously in 1857. It is a simple story of public-school life, admirably presented, and underlying it is a strong, sound religious sense, that had the greater influence for not being unduly obtruded. See M. L. Parrish and B. K. Mann, *Charles Kingsley and Thomas Hughes*, 1936; and E. C. Mack and W. H. G. Armitage, *Thomas Hughes*, 1953.

Hughes, William Morris (1864-1952), Australian statesman, b. in Montgomeryshire, Wales. Educ. at Llandudno Grammar School and St Stephen's Church School, Westminster. Emigrated to Australia, 1884. Worked as farm hand, coasting sailor, and labour organiser. Member of Parliament from its estab. in 1901. Called to New South Wales Bar, 1903. Minister for external affairs, 1904. Attorney-general, 1908-9; again, 1910-13; and again 1914. Fisher resigned premiership in 1915, and H. took his place. He visited England, then in the turmoil of war, in 1916, was made privy councillor, and preached an imperialism little to the taste of the Brit. Labour party. He had become essentially a war-premier, failed to carry conscription, fell out of favour on the coming of peace, had to resign in 1923, and in 1929 began forming a new group called the 'Australian party.' In that year he pub. an evangel of empire called *The Splendid Adventure*. Joined the Commonwealth Gov. as vice-president of the executive council, 1934-5, and again in 1937-8. Minister of health and repatriation (Lyons Gov.), 1934-5, 1936-7; of external affairs, 1939-40; attorney-general and minister for industry, 1940-1; minister for the navy, 1941-4. See F. C. Browne, *They called him Billy*, 1946.

Hughesovka, see STALINO.

Hugli, Hooghly, or Hoogly: 1. Most westerly and commercially the most important of the mouths of the Ganges (q.v.), India, formed by the confluence of the Bhágrathi and the Jalangi R.s. Its length is about 200 m., and it is from 3 to 20 m. wide at the estuary. It is the only mouth of the Ganges navigable by large vessels, which can safely go up to Calcutta. Navigation is, however, much hindered by silting and the formation of sandbanks. The 'bore' is often of great height and velocity. The H. is held sacred by the Hindus.

2. Dist. of W. Bengal (q.v.), India, bounded on the E. by the H. R. Industries are concentrated immediately W. of the H. R. There is some agriculture. Chinsura is the cap. Area 1209 sq. m.

3. Tn of H. dist., W. Bengal, India, on R. H., 18 m. N. of Calcutta. The chief building is the Imambarra, a Muslim institution. The tn was founded about 1537 by the Portuguese, who were driven out a century later by the Mohammedians under Shah Jehan. Pop. is included with Chinsura.

Hugo, Victor Marie (1802-85), Fr. poet, dramatist, and novelist, b. Beaucanton, the son of Gen. H., an officer in Napoleon's

army. His childhood was full of change, as the family usually followed their father and the army, and he was educ. at the Feuillantines in Paris (1809-11 and 1813-15), at Madrid (1812), and at the École Polytechnique. His poetical genius asserted itself very early. In 1816 he produced a tragedy and the next year was nearly successful in an Académie competition; in 1819 he began to contribute to the newly founded *Conservateur Littéraire*, and was sev. times the victor at the *jeux floraux* of Toulouse. In 1822 he made his real literary début with *Odes et poésies diverses*. This vol. contains no great innovations, but is remarkable for strength



VICTOR HUGO

and beauty of diction and great dexterity in the handling of difficult rhythms. In 1823 he pub. anonymously *Han d'Islande*, a fantastic and extravagant prose romance, dealing forcibly, but with an utter disregard of possibilities, with a N. bandit. It was followed by *Bug-Jargal*, a similar production, 1826. His second vol. of poems, *Odes et ballades*, 1826, and his third, *Orientales*, 1829, definitely mark the trend of his tastes and opinions. They are 'romantic' in the extreme, the subjects being barbaric and fantastic, the metre varied and irregular, and the language glowing and exotic, but the matter is still rather empty and puerile. His first attempt at drama appeared in 1828. *Cromwell*, which was never acted, is more a romance in dramatic form than a true drama, but is of some importance in literary hist. It was preceded by a somewhat paradoxical preface, which served as a manifesto of the new Romantic school, asserting the dramatist's independence and emancipation from all the old conventions. Its pub. made H. the recognised head of the new movement, a position in which he took himself very

seriously. In 1830 *Hernani*, the first of his typical dramas, was acted at the Théâtre Français. Its subject is the suicide of a noble Spaniard at the moment of his marriage, on account of a point of honour. Its style is in direct antithesis to all the traditions of the Fr. stage. The language, though gorgeous, has none of the old classical periphrasis; the Alexandrine metre is completely changed in character by constant overlapping; and the old dramatic laws are set at naught. The play was the text of long and violent contention between the Classicists and the Romanticists, and this circumstance has given it a fictitious importance, since in spite of the splendid march of the verse *Hernani* is lacking in some of the principles of dramatic art.

In 1831 a correspondingly revolutionary production in the realm of prose romance appeared in *Notre-Dame de Paris*, a pretentious but picturesque novel of medieval Paris, which shows the influence of Sir Walter Scott. Its failings are a lack of proportion and humour, and an incompleteness of construction; but these are, at any rate at first, completely outweighed by H.'s wonderful faculty of description, command of passion, and splendid and poetical language. In the same year H. pub. *Les Feuilles d'automne*, a vol. of lyric and contemplative verse, which contains some very fine poetry.

The next few years were occupied in the production of dramas on the lines of *Hernani*. *Marion Delorme*, which appeared in 1831, is usually considered his best. The next year saw *Le Roi s'amuse*, interdicted after the first night, which has gained a world-wide reputation as *Ritoglietto*. They were followed by *Lucrèce Borgia*, 1833, a melodrama; *Marie Tudor*, 1833; *Angelo*, 1835, a prose melodrama; *Ruy Blas*, 1838, which stands second among his plays; and *Les Burgraves*, 1843, a kind of sentimental epic clumsily put into dramatic form, which contains, however, some wonderful writing. All these dramas show command of language, and fertility of invention, but are lacking in constructive art, which probably accounts for the waning of their popularity. Their production was interspersed with that of sev. vols. of charming verse: *Chants du crépuscule*, 1835, *Les Voix intérieures*, 1837, *Les Rayons et les ombres*, 1840; he also issued during this decade *Claude Gueux*, 1834, *Littérature et philosophie mêlées*, 1834, a collection of juvenilia, and *La Esmeralda*, 1836, an opera for Mlle Bertin.

H.'s political opinions had in the meantime been undergoing considerable changes. Previous to 1830 he had been an ardent legitimist, but during the reign of Louis Philippe he became a constitutional royalist, sitting in the Assemblée Constituante as a representative of Paris, later an extreme Liberal, and finally, on his election to the Assemblée Législative in 1848, a democratic republican. After the *coup d'état* of 1852, he was banished for opposition to Louis Napoleon, and fled to Brussels, then to Jersey, and finally to

Guernsey, where he lived till 1870. During this time his literary output was mainly confined to journalism and pamphleteering, but he soon resumed more serious work in exile. In 1853 he issued *Les Châtiments*, giving vent to his anger against the Second Empire. The book is notable as a rare example of lyric satire, a combination of true poetry with invective. After 3 years of silence, he emerged in an entirely different light with *Les Contemplations*, 1856, a collection of lyrics remarkable for beautiful expression, simple diction, and breadth and profundity of thought. In 1859 appeared the *Légende des siècles*, a collection of narrative and pictorial poems dealing with different periods of the world's history, which, though somewhat unequal, contains some of his masterpieces. Among the best of the poems are *Argemillot*, *Le Petit Roi de Galice*, and *Eriadmus*.

In 1862 H. pub. *Les Misérables*, a long and unequal prose romance, dealing with modern life. Its descriptive portions are remarkable, and much of the writing is touching and sincere, but the style is full of mannerisms, and the plot abounds in absurdities. In 1865 there appeared *Chansons des rues et des bois*, a collection of light lyric verse, notable for its style. It shows H. in rather a new light, and the grace, daintiness, and wit of some of these poems, though not always free from laboured mannerism, show the extraordinary adaptability of his genius. *Les Travailleurs de la mer*, 1867, another prose romance, is a tale of passionate adventure and self-sacrifice, and contains some exquisite passages.

After the revolution of 1870, H. returned to France and again entered politics, though not with very happy results. He was elected to the National Assembly at Bordeaux as representative for the Seine, but soon resigned. He remained through the rule of the Commune and defended the Vendôme Column as long as possible and then retired to Brussels. He was expelled from Belgium on account of an imprudent speech in favour of the Communards, and returned to France, where he unsuccessfully stood for Paris. He lived in France till his death, in considerable literary and general popularity.

The writings of this last part of his life are of comparatively little importance. They include: *L'Année terrible*, 1872, almost his weakest book, a series of eloquent pictures of the war, full of praises of France and invective against Italy; *Quatre-Vingt-Treize*, 1874, another historical romance; *Seconde Légende des siècles*, 1876, which, though not equal to its predecessor, is still full of vigour; *Histoire d'un crime*, 1877, described as 'the apotheosis of the Special Correspondent'; *L'Art d'être grand-père*, 1877, containing much that is charming, but a good deal of 'sentimentalism'; *Le Pape*, 1878; *La Pitié Suprême*, 1879; *L'Âne*, 1880; *Les Quatre Vents de l'Esprit*, 1881, a remarkable last flash of genius; and *Torquemada*, 1882. He d. 22 May 1885, and his

funeral was marked by a great display of public feeling.

H.'s position in Fr. literature is important in that he is not only bestowed on Fr. Romanticism a peculiarly 'decorative' character, but actually kept the Romantic spirit alive in France for some 30 years after its apparent decease. As a writer his powers were wonderful. To name only a few of his characteristics, he is notable for vitality, wide scope of genius, graceful lyrical power, rhetorical magnificence, the ability to express pathos, awe, and indignation; wealth of colour and light; variety of style, and consummate skill in the handling of metre and language. His main defects are a lack of humour and proportion, and an all-pervading egotism, but despite these he stands on a level with the great names of international literature. See E. Biré, *Victor Hugo*, 1880, and other vols. by the same author; E. Dupuy, *Victor Hugo, l'homme et le poète*, 1887, and *La Jeunesse de Victor Hugo*, 1902; F. Gregh, *Étude sur Victor Hugo*, 1915; Mary Duclaux, *Victor Hugo*, 1921; E. M. Grant, *Victor Hugo during the Second Republic*, 1935; P. Zumthor, *Victor Hugo, poète de satun*, 1946; J. B. Barrère, *La Fantaisie de V. Hugo*, 1949, *V. Hugo, l'homme et l'oeuvre*, 1952.

Huguenots, name for the Fr. Protestants of the 16th and 17th cents. They grew up under Francis I and Henry II, and under Francis II developed a religious-political organisation, headed by the Bourbons, especially the king of Navarre and the duke of Condé, and opposed to the Catholic party, headed by the Guises. A long series of religious wars began in 1562. Civil rights were granted to the H. by Henry IV in the Edict of Nantes, 1598, but on the revocation of the Edict by Louis XIV in 1685 many Protestants fled from France to Brandenburg, Britain, etc. Perfect civil equality was secured to all denominations by the revolution of 1789. See also FRANCE, History.

See J. Hilaire, *L'heureuse Conversion des Huguenots*, 1610; L. Richeome, *L'idolâtrie Huguenote*, Arras, 1608; F. Puaux, *Histoire de la Réformation française*, 1858; O. Browning, *History of the Huguenots*, 1840; H. M. Baird, *The Huguenots and the Revocation of the Edict of Nantes*, 1895; F. Puaux, *Histoire populaire des Camisards*, 1878; L. Seymour-Houghton, *Handbook of French and Belgian Protestantism*, 1919; J. Viénot, *Histoire de la Réforme française*, 1926-34; C. J. Burckhardt, *Richelieu*, 1935; R. Stephan, *L'Épopée huguenote*, 1946.

Huhhot, Kueisui, or Kweihwa, cap. of the Inner Mongolia Autonomous Region, China, formerly called Kueisui, cap. of Suiyuan prov., which since 1953 has been incorporated in the region. It is an important industrial city in Inner Mongolia with railways leading to Peking (450 m. to the E.), Ulan Bator, and Paotun (90 m. to the W.), and thence to Lanchow. Its chief industries are wool, fur, dairy products, flour, and cotton textiles. It is also a trading centre

between W. and N. China and Outer Mongolia. Owing to immigration in the first half of the century, the Chinese outnumber the Mongolians; the latter, however, are now entrusted with the administration. Pop. about 650,000.

Huila, volcano in the Andes, Colombia, 60 m. NE. of Popayán. It is 18,865 ft

high, dept of Central Colombia, which lies between the central and E. Cordilleras and is watered by the Magdalena R. It has an area of 7992 sq. m. Coffee is grown by smallholders, but on a much smaller scale than in a number of other depts. The cap. is Neiva (pop. 15,100) on the upper Magdalena R. Gold has been found near Neiva, and alum and asphalt are worked. Pop. 323,000.

Huila, fort. in the prov. of Angola, Portuguese West Africa, 90 m. NE. of Mossamedes. It is healthily situated and is the centre of a fertile agric. dist. H. has a fine cathedral.

Huitzilopochtli, the Mexican war-god whose feasts in May, July, and Dec. were scenes of revolting savagery. Thousands of human victims were sacrificed yearly in his honour. The idol was generally wooden and of huge proportions, the face covered with a golden mask, and on the head a plumed helmet shaped like a bird's beak.

Huleh, Lake of, in upper Galilee, Israel, known in Biblical times as the Waters of Merom, area 5.4 sq. m. The Jordan flows into it from the N. and continues from the S. to the Sea of Galilee. The gov. of Israel plans to drain the lake and use the surplus water for irrigation. Under the armistice agreement of 1949 between Syria and Israel the area has been demilitarised.

Hull, Cordell (1871-1955), Amer. statesman and lawyer, b. in Overton Co. (now Pickett), Tennessee. He graduated from Cumberland Univ., 1891, and became a lawyer and judge. He served as a captain in the Sp.-Amer. War. Member of Tennessee House of Representatives, 1893-7, then a judge in Tennessee, 1903-7. Was Democrat Representative for Tennessee in Congress from 1907 to 1921 and from 1923 to 1931. Senator for Tennessee State, 1931-3, resigning to become secretary of state in Roosevelt's Cabinet. Was the leading figure in the Pan-Amer. conference at Monte Video, 1933, a landmark in New World hist. Like Roosevelt he showed, as early as 1933, that he belonged emphatically to the internationalist, as opposed to the isolationist, school of thought. When H. entered the State Dept in 1933 his one aim was to secure the reduction of tariff barriers, and though when he left that dept in 1944 the U.S.A. was at war in 4 continents he still thought in terms of free trade and the rule of international law. With Roosevelt he was in advance of Amer. opinion, in 1937, on the Sino-Jap. war, and would have taken positive steps to hamper Japan's aggression. In 1938 he unofficially declared 'a moral embargo' upon the shipment of airplanes to all countries

which engaged in the aerial bombardment of civilians. Though the pendulum, at first, swung but slowly from isolationism to internationalism, it is probably owing to H. (next to Roosevelt) that the Amer. people were awakened to their danger, and as a foreign minister he stands in the line of Adams, Wenster, and Hay. Awarded Nobel Peace Prize in 1945. See *The Memoirs of Cordell Hull*, 1948.

Hull, Edward (1829-1917), geologist, b. Antrim. In 1869 he was appointed director of the Geological Survey of Ireland and prof. of geology in the Royal College of Science, Dublin. He conducted a geological expedition in S. Palestine and Arabia Petraea in 1883-4; and another in the Nile Valley in 1893.

Hull: 1. (or **Kingston upon Hull**) Parl. and co. bor. and riv. port of the E. Riding of Yorks, England, at the junction of the R. Hull with the R. Humber, 22 m. from the North Sea. Situated on the N. bank of the Humber, which is the natural approach to the great industrial areas of Yorks, E. Lancs, and the N. Midlands, the port has adequate accommodation and equipment for the rapid and economical handling of goods consigned to or from all parts of the world.

History.—Developing most probably from a small trading station on the r. b. of the R. Hull, the site of the modern bor. was held at the end of the 12th cent. by the Cistercian monks of Meaux Abbey in Holderness. Their settlement, then known as Wyke, was acquired by Edward I in 1293, and its name changed to Kingston upon H. In 1299 its first charter made the tn a free bor., and it grew into a flourishing port. New quays were built, internal communications improved, a ferry to the Lines shore of the Humber estab., and in 1322 the tn was enclosed and fortified. In 1440 a charter of Henry VI incorporated the tn, and created the co. of the tn, which was afterwards (1447) extended to include the pars. of Hesse and North Ferriby, the priory of Haltemprice, and other townships (all of which remained part of 'Hullshire' till 1835). Henry VIII took a keen personal interest in H., and new fortifications to protect the harbour were largely devised by the king himself, whose instructions in his own handwriting are still extant. It was from the Humber that the Pilgrim Fathers set sail for Leyden in 1620, whence they re-embarked for Plymouth to join the *Mayflower*. In the Civil war the first forcible resistance to Charles I was the closing of the gates of H. against him in 1642, and the tn sustained 2 sieges. It continued to maintain its position as a port and thriving commercial centre, and between 1774 and 1829 3 docks were built to make a ring of water around the old tn. The largest dock in H., the King George, was opened by George V in 1914. The city has a fine collection of royal charters and letters patent dating from Edward I (1289) to George V (1914), and of 37 granted to the tn by various sovereigns 22 are still preserved in the Guildhall.

The charter of 1661 became the charter under which the tn was governed until the Municipal Corporations Act of 1835. The tn was created a city on 6 July 1897, and the office of mayor was raised to that of lord mayor on 26 June 1914. During the Second World War the central area of H. was severely damaged, but industrial and other reconstruction has now largely been achieved, and energies are being devoted to the extension of industry and the restoration of housing. over 11,000 new dwellings having been provided (1957). The larger part of the central shopping area has also been rebuilt, thus re-establishing H. in its pre-war position, serving an area comprising a pop. of 750,000. The city's development plan under the Town and Country Planning Acts, one of the first to be approved in the country, is a broad guide to its future development in all its physical, commercial and industrial, cultural, educational, and other aspects.

Buildings.—The prin. church of H. is Holy Trinity, the great church beside the market place which dates back to the 13th cent. The chancel (Early Eng.) is said to be one of the oldest buildings of brick in the kingdom still in use for its original purpose. The rest of the fabric is of stone (mainly late Perpendicular). St Mary's Church, Lowgate, originally built by the Knights Hospitallers of North Ferriby, dates from the early 14th cent. Wilberforce House, High Street, a fine Elizabethan manor and the bp. of Wm Wilberforce, the philanthropist, now serves the city as a museum and memorial to Wilberforce. Among educational institutions the Nautical College and School for Fishermen, the Trinity House Navigation School, and the Marine Engineering and Wireless Telegraphy and Telephony Depts of the Municipal Technical College serve the special needs of H.'s maritime pop. The Technical College, the Regional College of Arts and Crafts, and the College of Commerce are all large and well equipped. The univ. (see HULL, UNIVERSITY OF) guides the academic and cultural life of the city and dist. The city hall, the dock offices, the central library, the Ferens art gallery, the guildhall and law courts are notable.

Port, docks, and trade.—The port accommodation comprises 11 docks, with a water area of 200 ac. and 12 m. of quays, and has a frontage to the Humber of over 7 m. The King George Dock, covering 53 ac., is the largest and best equipped dock on the N.E. coast, and when a further extension is completed it will contain an area of 85 ac. Alexandra Dock (52 ac.), with a depth of 32½ ft. can accommodate large ocean-going steamers. It is used to a large extent by the grain trade and for the export of heavy machinery, chemicals, iron, and steel. The Victoria Dock (22 ac.) is the chief centre of the timber import trade. The Albert and Wm Wright Docks (28½ ac.) handle a great deal of Scandinavian and near-Continental trade. A new riverside quay and complementary development of the S. side, Albert Dock.,

Receiving House, Hyde Park, was their first depot; there are now some 300, where boats and boatmen with life-saving apparatus are available. Money rewards, medals, claps, and testimonials are bestowed on those who save or attempt to save people from drowning, and the society has extended its scope to include 'all cases of exceptional bravery in rescuing or attempting to rescue persons from asphyxia in mines, wells, blasting-furnaces, or in sewers where foul gas may endanger life.' In 1873 the Stanhope gold medal was instituted, and is given to the 'case exhibiting the greatest gallantry during the year'; prizes are also given for swimming to public school and training ships. The society is carried on by means of subscriptions and bequests; the offices are at Watgate House, York Buildings, Adelphi, London, W.C.2.

Humanism, see PRAGMATISM.

Humanitarians, originally a name given to a certain school of theologians in the middle of the 18th cent. who did not believe in the Trinity and regarded Jesus Christ as merely human—the founders of the Unitarian churches in England. It was also applied to the followers of Pierre Leroux (q.v.), who taught the perfection of man apart from the divine. In a more general sense it is used in modern times of a set of people whose main object is to lessen as far as possible the physical pain and discomfort in the world of to-day, and who hold strong views with regard to modern warfare, corporal punishment, etc.

In this modern sense, the **Humanitarian League**, founded by H. S. Salt (d. 1937), aimed at consolidating philanthropic and zoöphilist sentiments and ideas into a 'humanitarian system of ethics.' See H. S. Salt, *Seventy Years among Savages*, 1921, *The Logic of Vegetarianism*, 1933; and H. Moore, *The Universal Kinship*, 1935.

Humansdorp, div. of Cape Province, South Africa, 9 m. from the Indian Ocean, and bounded on the N. by the Winterhoek Mts. Cap. H., 58 m. by road from Port Elizabeth. Pop.: whites, 1478; others, 1076.

Humayun (1508–56), Mogul emperor of Delhi. In 1530 he succeeded his father, Baber, in India, the kingdom of Kabul and Lahore going to his brother Kamran. For 10 years he was engaged in fighting the Afghans under Sher Shah, and was at length defeated and fled to Persia. In 1545 Sher Shah was killed, and H. returned to India with his son Akbar, and again occupied Delhi, but 6 months later he was killed by a fall from the parapet of his palace (1556), and his son, Akbar the Great, succeeded him. It was at his tomb, one of the magnificent Mogul monuments near Delhi, that Hodson captured the last of the Moguls, Bahadur Shah, 1857.

Humber, estuary on the E. coast of England lying between Yorks on the N. and Lincs on the S., and formed by the R.s. Trent and Ouse. These rivs. join the vil. of Faxfleet, and from there

the H. runs for 18 m. in an easterly direction, and then 19 m. in a S.-easterly direction to the North Sea, widening from a m. at the head to 8 m. in the bay formed by a spur on the Yorks coast known as Spurn Head. The area drained by the H. is 9293 sq. m. It is an important commercial waterway, and has on its banks the ports of Hull and Grimsby.

Humbert I and II (kings of Italy), see UMBERTO I and II.

Humble-bee, or **Bumble-bee**, name given to species of the family *Bombidae*, sub-order Apoidea of the order Hymenoptera. Their habits bear closer resemblance to those of the wasps than is the case with the genus *Apis*. The workers do not differ externally from the queens, and the colonies perish at the end of each season, save for a few females which survive the winter, and each of which starts a new society in the spring. The female of *B. lapidarius* builds its nest in cavities among stones, merely lining the sides with moss, but *B. terrestris* and other species form a habitation out of carded moss, in deserted mouse-nests, holes in the soil, etc. The wax is secreted in the abdomen of the insect, and is then transferred to the legs and moulded into building material. After the construction of the first cell, the female deposits the eggs therein, closes up the cavity, and rests sev. days before proceeding to the construction of other cells. The larvae expand and distend the cell in a curious, irregular manner, and when full-grown they pupate in the moss, each larva forming a cocoon of finest silk. The queen scrapes away the wax from the cocoon, to assist pupation, and as the brood becomes matured she gives up to them the labour of collecting pollen and confines herself to producing eggs. The females, which are smaller than the mother, assist her in the process of egg-laying, as also do the workers to a lesser extent. The species of *Psithyrus* also inhabit the nests of the H.s., and some of them bear a curious resemblance to their hosts. There is not that symmetry of structure in the cell of the H. which is so marked in the cell of the honey-bee, and they vary considerably in size. H.s. display a great variety of colouring, which runs generally in bars of alternate light and dark. *B. terrestris*, *B. hortorum*, *B. lapidarius*, etc., vary even in the same species. The genus is widely distributed in the S. hemisphere, but is unknown in the Ethiopian and Australian regions. See also BEE.

Humboldt, Friedrich Heinrich Alexander, Baron von (1769–1859), naturalist, b. Berlin. He studied at Frankfurt am der Oder and Göttingen, and having made an excursion to the Rhine during a vacation pub. *Mineralogische Beobachtungen über einige Basalte am Rhein*, 1790. He afterwards went to Freiberg to study geology and produced his *Florie Fribergensis Specimen*, 1793. In 1799 he went to South America with Aimé Bonpland, and the next 5 years were taken up with explorations in Venezuela, Colombia,

Equador, Peru, Cuba, and Mexico, an account of which was pub. in his *Voyages aux Régions Equinoxiales du Nouveau Continent*, 1807, which consisted of 30 folio and quarto vols. In 1807 he paid a visit to Italy, but ultimately went to Berlin, where he was occupied from 1827 to 1828 in giving lectures, the substance of which appeared later in *Cosmos*, 1845-1858, one of the greatest scientific works ever pub. In 1829 he made a journey with Rosee and Ghrenberg through Central Asia, and explored the Ural and Altai Mts, Dzungaria, and the Caspian, the results of this expedition appearing in *Fragments de géologie et de climatologie asiatiques*, 1831, and in *Asie Centrale* (an enlargement of the earlier work), 1843. See lives by H. Bruhns, 1872 (trans. into Eng. by the Misses Lassei, 1873); and A. Leitzmann, 1936.

Humboldt, Karl Wilhelm, Baron von (1767-1835), was a rare combination of linguist, literary critic, historian, philosopher, and statesman. Amongst his friends were Schiller, Goethe, and Körner. He was Prussian representative in Rome (1801), Vienna (1810), and London (1817-1818). In 1809 he became head of the dept of public instruction in the ministry of the interior, and the Berlin Univ. owes its existence to him. In 1813 he was Prussian plenipotentiary at the Congress of Prague, but he was dismissed in 1819 because of his liberal ideas and his opposition to the concerted policy of the king of Prussia, his chancellor von Hardenberg, and Metternich. His works include *Über das vergleichende Sprachstudium*, etc., 1820; *Untersuchungen über die Urwörter Hispaniens vermittelt der baskischen Sprache*, 1821; *Über die Aufgabe des Geschichtsschreibers*, 1822; *Über das Entstehen der grammatischen Formen und deren Einfluss auf die Ideen*, 1822; *Über die Buchstabenschrift und ihren Zusammenhang mit den Sprachen*, 1824; *Über den Dualis*, 1827; *Über die Kawi Sprache*, etc., 3 vols., posthumously in 1836-40. His *Gesammelte Werke*, 7 vols., 1841-52, were ed. by C. Brandes; *Gesammelte Schriften*, 17 vols., ed. by the Berlin Academy, 1903-36; correspondence with his wife, 7 vols., ed. by Anna von Sydow, 1906-16; with Schiller, ed. by A. Leitzmann, 1900, and supplemented by C. Ebrard, 1911; with Goethe, ed. by L. Geiger, 1909. His philosophical writings (a selection), were ed. by J. Schubert, 1910, etc. See biography by P. Schaffstein, 1952.

Humboldt, riv., rises in the NE. of Nevada, flows WSW. through the Humboldt Lake, and is lost in the marshy dist. known as the H. Sink. Length, c. 300 m.

Hume, Allan Octavian (1829-1912), was educ. at the East India College (now Haileybury College), passing from there to the Indian Civil Service (1849). In Simla he formed an organisation which would further the aspirations of advanced Indians; this was the birth of the National Congress (see his *Audi Alteram Partem*). When H. returned to England in 1894 he took great interest in the Brit. Committee

of the Indian Congress. In India H. made a valuable collection of botanical and ornithological specimens, and pub. *The Game Birds of India, Burma, and Ceylon*, 1879-81. He presented his collection to the Brit. Museum of Natural Hist. (South Kensington). He founded the South London Botanical Museum and made provision for it in perpetuity. See studies by W. Wedderburn, 1913, and H. V. Lovett, in *History of the Indian Nationalist Movement*, 1920.

Hume, David (1711-76), Scottish philosopher and historian, was intended for the Bar, but abandoned the intention of becoming a lawyer owing to ill-health. He went to France in 1734 to recuperate, and there wrote his *Treatise on Human Nature*, which was pub. anonymously in 1739-40, 2 years after his return. This book attracted little attention at the time, but a better fate attended his *Essays Moral and Political*, 1741-2, and his subsequent works, *Philosophical Essays concerning Human Understanding*, 1748, the famous *Enquiry concerning the Principles of Morals*, 1751, and his *Political Discourses*, 1752. He had failed in 1745 to secure the professorship of ethics at Edinburgh Univ., and later his application for the chair of logic at Glasgow Univ. was not successful; but in 1752 he was appointed keeper of the Advocate's Library at Edinburgh and also secretary to the Edinburgh Philosophical Society, which latter post he resigned 5 years later. He now worked steadily at his *History of England*, which was pub. in 5 vols, 1754-1761. In 1763 he went to Paris with Lord Hertford, and held an official post at the embassy, and became a noted and popular figure in society. The last years of his life were spent at Edinburgh. His autobiography, *My Own Life*, was pub. 2 years after his death, and his *Correspondence* (ed. Birkbeck Hill) in 1888. Other posthumous works were *Suicide and Immortality*, 1777, and *Dialogues concerning Natural Religion*, 1779. The value of his philosophical writings has never been questioned, although at one time his scepticism made him notorious among the orthodox, and he takes his place as one of the leading metaphysicians in this or any other country. His hist. suffers severely from inadequate research, and is best studied in the abbreviated version, ed. by Dr Wm Smith, 1870. The force of H.'s philosophy lies in the fact that he carries the empirical and sensationalistic tendencies of Locke and Berkeley to their conclusion. The psychology on which his results are founded follows that of his predecessors but is less ambiguous. Every object whatsoever is reduced either to an impression or an idea—ideas evidently corresponding closely to impressions but differing in the degree of force or vivacity. For H., impressions and ideas, whether simple or complex, are the sole contents of the human mind, all of them going back originally to impressions. Hence, as Berkeley said, there can be no such thing as material substance, and reality is co-extensive with ideas.

Berkeley held, however, that we could know spiritual substance as opposed to material; but H. asked what, indeed, is the positive impression on which the idea of spirit is founded, and he held that neither had any existence. H. said that, if all his perceptions were removed by death and he could neither think, nor feel, nor see, nor love, nor hate after the dissolution of his body, he would be entirely annihilated, nor did he conceive what was further requisite to make him a perfect nonentity—in short H.'s scepticism can imagine no life after this annihilation of the perceptions (we may not say 'of the self' because H. denies the validity of the notion 'self'). H., however, holds that there are certain all-pervading relations, outside the relation to a self, which seem to bind our ideas to form what we call knowledge. The most important of these relations is that of cause and effect, but it is necessary to examine whether such relations correspond to definite impressions. Berkeley thought that he had found a basis for the reality of causation in the free activity of Spirit. H. however asks for the corresponding impression and seeks the derivation of the relation of cause-and-effect from some relation among objects themselves as distinct from any particular qualities in those objects; and he finds such relation in the 2 concepts of contiguity and succession. These, however, do not exhaust causation; for an idea may be contiguous and prior to another without being regarded as its cause. Something of the first importance remains to be added and that is the idea of necessary connection. To the question, for what reason do we pronounce it necessary that everything whose existence has a beginning should also have a cause, H. denies that the necessity exists and that every demonstration which may be produced for the necessity of a cause is fallacious and sophistical. To the question, why do we conclude that such particular causes must necessarily have such particular effects and what is the nature of that inference we draw from the one question to the other, H. answers by suggesting that, if the belief in the necessity of a cause is not referable to any intuitive truth, it must proceed from observation and experience. And here, he says, we insensibly light upon a new relation between cause and effect, that is, their constant conjunction; or, in other words, contiguity and succession are not sufficient to make us pronounce any two objects to be cause and effect, unless we perceive that these two relations are preserved in sev. instances, an inquiry which will enable us to discover the essential nature of the idea of necessary connection. H. arrives at the conclusion that the peculiar strength of our belief in causal inference is due to the fact that, by constant conjunction, the relation of cause and effect has acquired the force of custom, or habit. What we call power, or force, or causal efficiency, says H., exists not at all in objects, but only in the mind. 'Necessity is some-

thing that exists in the mind, not in objects; nor is it possible for us ever to form the most distant idea of it, considered as a quality in bodies.' This is his chief contribution to philosophy; he admits that it is a violent paradox but considered that he had advanced solid proof and reasoning to justify it. From this hypothesis, he goes on to consider the origin of a belief in the external world or to answer the question, 'How out of a flux of unrelated feelings, never repeated, do we evolve an independent world of identical things, and identical selves?' And suggests that we have only succeeded in reasoning ourselves 'into a frame of mind where the solid fabric of the world dissolves like a dream before our eyes, or passes into a kaleidoscopic unreality of change.' But, he asks, is then scepticism the final word of philosophy? Apparently the result of H.'s inquiry is not intended to destroy belief (assuming that were possible), but to dispose of the false assumption of its certain and demonstrable character. Of course the forthright nature of H.'s conclusions was itself the promise of a new epoch, and the first attack on his scepticism came from the so-called Scottish school of Reid, Dugald Stewart, and Sir Wm Hamilton, though the merits of Reid have tended to be obscured in the greater light of Kant. See also CLASSICAL ECONOMISTS. See T. H. Huxley, *Hume*, 1879; E. Albee, *Hume's Ethical System*, 1897; G. H. Sabine, *Hume's Contribution to the Historical Method*, 1906; C. D. Broad, *Hume's Theory of the Credibility of Miracles*, 1916; C. W. Hendel, *Studies in the Philosophy of Hume*, 1925; A. E. Taylor, *Hume and the Miraculous*, 1927; A. Leroy, *La Critique et la religion chez David Hume*, 1930; J. Laird, *Hume's Philosophy of Human Nature*, 1933; J. F. Doering, *Hume and the Theory of Tragedy*, 1937; N. K. Smith, *The Philosophy of David Hume*, 1941. See also ETHICS.

Hume, Ferguson Wright (1859-1932), novelist, b. England, son of a New Zealander. Educ. at the Univ. of Otago, he went to Australia, where he wrote *The Mystery of a Hansom Cab*, 1886; it sold about half a million copies, and though now forgotten ranks as one of the earliest and most successful detective stories of all time. Later H. went to England and settled in Essex. He wrote other mystery stories, but never repeated his first success.

Hume, Grizel, see BAILLIE, LADY G.

Hume Reservoir and River, see MURRAY OR HUME.

Humerus, in anatomy, a term denoting the bone of the upper arm; or, in quadrupeds, the upper fore-leg.

Humfrey, Pelham (1647-74), composer, was a chorister in the Chapel Royal under Henry Cooke, began to compose very early and joined Blow and Turner in writing the so-called 'Club' Anthem. Charles II sent him abroad for study in 1664; he returned from France and Italy in 1667 and succeeded Cooke as Master of the Children in 1672, having Puroell

among his pupils at the Chapel Royal. He wrote anthems and songs for plays.

Humic Acid, *see* HUMUS.

Humidity refers to the condition of the atmosphere as regards its water vapour content. For a general account and description of method of measurement, *see* **HYGROMETER**. Human comfort depends markedly on the H. of the atmosphere, especially in hot climates.

Hummel, Johann Nepomuk (1778-1837), Austro-Hungarian pianist and composer, *b.* Pressburg. He was a pupil of Mozart and stayed with him. At the age of 10 he started on a concert tour through Europe, including Scotland and England, and returned to Vienna (1793) to study under



J. N. HUMMEL

Albrechtsberger and Salieri. In 1804 he succeeded Haydn as *Kapellmeister* to Prince Esterházy; in 1816 he was appointed musical director at Stuttgart, and from 1819 he filled the same position at Weimar, where he *d.* His chief works are sonatas, concertos, and studies for the piano, and his famous *Pianoforte School* did much to develop modern keyboard technique. As a piano composer he had some influence on the younger generation, including Chopin and Schumann; but his operas, church and chamber music, and instrumental sonatas, though very numerous, are now forgotten. *See* K. Benyovszky, *J. N. Hummel: der Mensch und Künstler*, 1934; W. Meyer, *Johann Nepomuk Hummel als Klavierkomponist*, 1922; G. Spork, *L'Interpretation des sonatas de Johann Nepomuk Hummel*, 1933.

Humming-bird Moth, *see* **HAWK-MOTH**.

Humming-birds are members of the micropodiform family Trochilidae, and are so called because of the vibrating sound produced by their wings; there are from 400 to 500 species, all of which are confined to America and the West Indies. Among them are some of the smallest of living birds, *Mellisuga minima* measuring only 2½ in. in length. They are character-

ised by a long, awl-shaped bill, and a long cleft tongue in the form of a double tube, which can be protruded to a considerable distance and withdrawn again very rapidly; the sternum is greatly developed, forming a suitable base for the strong wing-muscles, which assist the untiring flight; the plumage is generally exquisite in colouring, especially in the males, with a brilliant metallic lustre, the effect of which is heightened by the crest, ear-tufts, and ruffs. The Trochilidae feed on insects supplemented by nectar, and dart from flower to flower in search of food pausing over the plant with the body suspended in a vertical position and the wings whirring continuously, which gives a curiously indistinct and misty effect to the plumage. *Patagona gigas*, the largest species, reaches a length of 8½ in., and inhabits the Andes from Ecuador to Chili; it is bronze-green, with reddish underparts, and is characterised by the flapping movement of its wings, in place of the usual vibratory movement. *Trochilus colubris*, in addition to the green-and-white colouring, has a brilliant red throat, with a forked tail of bluish black; *T. alexandri* of North America has the throat of deep purple. *Lophornis* is a beautiful genus, extending from Costa Rica to Mexico; *L. ornatus* has fawn-coloured tufts with green terminal spots on each side of the neck. *Loddigesia mirabilis* of Peru is one of the most gorgeous species; the upper plumage is a lustrous bronze-green, the under-parts are white, the throat is emerald-green, rimmed with black, and the head and crest are a vivid blue. The female is green, with white below. *M. minima*, called the bee H. because of its tiny size, is found in Jamaica and Santo Domingo, and the male is characterised by its dusky throat-spots. *Docimastes enaifer*, the sword-bill, has a straight beak, 5 in. long, which is more than the length of body and head together. *Rhamphomicron*, the thorn-bills, have the smallest beaks, that of *R. microrhynchum* measuring only ½ in. The species of *Phaethornis* are sometimes termed the hermits, because of their more sombre green and brown plumage, and also from their habit of frequenting dark woods and forests; they examine the crevices of trees in search of spiders, which form their habitual diet, and, poised in mid-air, the hermit will pass his bill over the under-surface of leaves, swallowing any insects hidden there. The H. will rarely live in captivity, and few have been carried across the Atlantic alive.

Humour (Lat. *humor*, moisture) is a term which has changed greatly in meaning. In medieval times it was used in a medical sense to signify any of 4 fluids supposed to be secreted in the body and influencing the character; hence it came to mean 'habit of mind' or 'disposition.' 'Comedy of humours' is the term applied to such plays as Ben Jonson's (q.v.), where each character represents some special trait in exaggerated form. In Shakespeare H. means 'whim' or 'caprice,' and 'the humorous Duke' in *As*

You Like It, far from being a w. person, is moody and morose. The meanings 'comicality' and 'ability to see the funny side of things' are later developments. But the conception is as old as written literature, and the anc. Greeks had all the varieties of H. that appear in our language—burlesque, satirical, playful, or nonsensical. The H. of Aristophanes (q.v.) and other Gk comedians is as elaborate and sophisticated as any in modern times. In the lower civilisation of the Middle Ages H. became crude and coarse, and this type fl. in England till the 17th cent., as is shown by the tone of the jest-books (q.v.) then current. Even in the 18th cent. it was a tradition that H. must be low, and Goldsmith (q.v.), himself no mean humorist, declared 'To expect exalted humour is a contradiction in terms.' This tradition however was partly due to the different use of the word, for as early as Chaucer there appears a gontly satirical type of H. which is quite modern. Early Eng. comedy tended to be coarse farce, but when tragedy and comedy were introduced in the same play it became less crude. It was not however till the general improvement of manners and morals in the 19th cent. that Eng. H. developed all the forms to which we are accustomed. There was then introduced a H. of language rather than of situation, and this became a great age of word-play, Thomas Hood, supreme master of the pun, writing such lines as:

They went and told the sexton and
The sexton toll'd the bell.

In the present century the pun has come to be despised, though it is still used playfully in, for example, names of restaurants like 'The Candied Friend,' 'The Pop Inn,' or 'Chez When.' Nonsensical H. was rendered fashionable by Edward Lear and 'Lewis Carroll' (qq.v.), and this type is still popular, though the limerick form used by Lear has now a rival in the clerihew invented by E. C. Bentley (q.v.). Typically Eng. in their inconsequence are such jokes as the supposed dialogue in a suburban train: 'Is this Wembley?'—'No, Thursday.' A similar type, very popular in *Punch*, is based on illiteracy, and is as old as Dogberry's 'Most tolerable and not to be endured.' The old H. of situation bordering on farce appears in *Pickwick Papers* and *Charley's Aunt*, and is well illustrated in such writers as W. S. Gilbert, Jerome K. Jerome, and the present-day novelist P. G. Wodehouse (qq.v.). Like modern poetry, modern H. shows a tendency to be both allusive and elusive. H. varies greatly with different countries; hence the Eng. assertion that the Scots have no sense of H., and the Amer. contention that the Eng. have none; no one, however, has ventured to suggest that it is lacking in the Irish. Scottish H. tends to the macabre, as in Burns's *Tam o' Shanter*, and is often concerned with death. Amer., on the other hand, often resembles Eng. of a bygone age, using mis-spellings, outrageous puns,

and manufactured dialect, such as appear in the works of 'Artemus Ward,' 'Josh Billings,' and 'Mr Dooley.' These writers are now unfashionable, but the tradition of word-jumbling is carried on by Ogden Nash (q.v.), most popular of living humorous poets, who excels in far-fetched rhymes and rhythms and such sublimely ridiculous reflections as that 'incompatibility in marriage does not matter, provided he has an income and she is patable.' In American prose 'Mark Twain' (see CLEMENS, S. L.) stands supreme as the genial master of 'debunking' H., while to a later date belongs the satirical irony of the Canadian Stephen Leacock (q.v.) (who was actually b. in Hants). Modern Amer. humorists who have many admirers on both sides of the Atlantic are James Thurber and Damon Runyon (qq.v.). See G. Meredith, *The Idea of Comedy*, 1897; Carolyn Wells (ed.), *The Book of Humorous Verse*, 1920; J. C. Squire (ed.), *The Comic Muse*, 1925; S. Leacock, *Greatest Pages of American Humour*, 1935; L. Copeland (ed.), *The World's Best Jokes*, 1937; G. Pocock and M. M. Bozman (ed.), *Modern Humour*, 1940; M. Roberts (ed.), *The Faber Book of Comic Verse*, 1942; H. G. Nicolson, *The English Sense of Humour*, 1942; R. L. Green (ed.), *A Century of Humorous Verse*, 1959; also entries under authors mentioned, and BURLESQUE; JEST-BOOKS; LIMERICK; PARODY; SATIRE; WIT.

Humpback, see HUNCHBACK.
Humperdinck, Engelbert (1854-1921), Ger. composer, b. Siegburg. He studied at the Cologne Conservatory and the Royal School of Music, Munich, and from 1880 to 1881 assisted Wagner in the preparations for the production of *Parsifal*. He taught music in the conservatories of Barcelona and Cologne (1885-90), and was prof. at Hoch's Conservatory at Frankfurt-am-Main from 1890 to 1896. In 1884 his popular choral work *Das Glück von Edenhall* was first sung, and the choral ballade *Die Wallfahrt nach Kevelaar* in 1887; but it was the appearance of his fairy-tale opera *Hänsel und Gretel* at Weimar in 1893 which made him famous. This was followed by others, of which only *KönigsKinder*, a play with music (1897) turned into an opera (1910), had something like the same success. He also wrote incidental music for plays (5 by Shakespeare) and in 1911 his music for Max Reinhardt's spectacle, *The Miracle*, pleased by still exploiting the vein of *Hänsel und Gretel*.

Humphreys, Mrs W. D., see RITA.
Humus, a complex organic entity, having chemical, physical, and biological significance as the basis of natural soil fertility. H. originates in the decomposition of vegetable and animal remains and wastes, though its formation and composition are incompletely understood. It exists as an amorphous, structureless, dark brown or black material in soils, slowly decomposing to simple end products. By fractionation H. may be divided into 2 parts: one that is insoluble in alkali, known as humin, and one that is

soluble in alkali. Little is yet known about humin. The second part may be divided into 2 parts, however: a water-soluble fraction, not precipitated by acid, known as fulvic acid; and a part precipitated by acid, now called the H. fraction, regarded by some chemists as H. proper. The H. fraction may be split into an alcohol-soluble part, termed hymatomelanic acid; and a part insoluble in water and alcohol, known as humic acid, though formerly known as mylla, and geic acid, in association with other

nutrients and end products. H. may vary in composition according to its raw material and the conditions under which it is formed, but not in character as the natural basis of fertility in all soils. See S. A. Wakeman, *Humus*, 1937.

Hunan, prov. of central China, bounded on the N. by Hupeh, on the E. by Kiangsi, on the S. by Kwangsi and Kwangtung, and on the W. by Kweichow and Szechwan. The prov. is hilly, the only plain lying around Lake Tungting. It is higher in the W. than in the E., and



E.N.A.

CH'ANGSHA, HUNAN: A VIEW ACROSS THE HSIANGKIANG

substances such as ulmin and ulmic acid. It is now recognised that both hymatomelanic acid and humic acid are fractions which contain numerous other complex substances and acids, such as resin acids and esters, glycerides, steroids, polyuronides, amino acids, and pentosan. The H. fraction is approximately composed of 50 per cent carbon, 35 per cent oxygen, 5 per cent hydrogen, \pm 5 per cent nitrogen, and 5 per cent various mineral constituents. H. is a base of ion exchange and a source of nutrients to plants. Physically, H. swells when wetted, increasing the water-holding capacity of soils, and improving pore space and aeration; and, being in part colloidal, it acts as a weak cement in forming clay particles into a granular or crumb structure. Biologically, H. serves as a source of energy to a wide range of micro-organisms largely concerned in its formation and decomposition into plant

among the mts there is Hengshan, one of the 5 sacred mts (Wuyao) upon which the celebrated tablet of Yu (q.v.) was placed. Prin. rivs. are the Hsiangkiang, with a basin of 39,000 sq. m., the Tszkiang, with a basin of 10,000 sq. m., the Yuankiang, with 35,000 sq. m., and the Likang, with 80,000 sq. m. The prin. products are tea, hemp, cotton, rice, paper, tobacco, tin, and coal, the whole S.E. part of the prov. being one vast coalfield, 21,700 sq. m. in extent. More than 90 per cent of China's production of antimony comes from H., the ann. output being about 25,000 tons. The prin. tns are the cap., Ch'angsha, Hsiangt'au on the Hsiangkiang, and Ch'angteh on the Yuankiang. Since the time of the Taiping rebellion (see TAI-PINGS) the Hunanese have been noted for their pride and obstinacy in admitting outside control. A considerable amount of fighting took place in this

area during the Civil war, particularly during the 1926 campaign. Area 83,178 sq. m.; pop. 33,226,954 (1954).

Hunchback, or **Humpback**, deformed condition of the spinal column. Slight irregularities of the normal curvature of the spine may result from various causes, such as malformation of other portions of the body, or even a well-established habit of standing or walking causing irregular pressure. The presence of a definite hump, however, is generally due to the development of Pott's disease, or tuberculous ulceration of the spine. This disease is characterised by the lodgment of tubercle germs in the vertebrae, and the consequent disintegration of part of their tissue by caseation (see **TUBERCULOSIS**). If the disease is not checked, the body of sev. vertebrae may crumble away, there is a collapse of their structure, and the spine curves sharply inwards, forming a pronounced hump and causing disproportion in the body generally. Owing to improved standards of living and modern diagnostic methods and treatment, H. should shortly be a forgotten sight in civilised countries.

Hundred, name of a div. of the majority of Eng. coos. important in late Saxon and Norman England. Its origin is extremely obscure, but by the 10th cent. it was an estab. administrative unit. Though its court then had all the features of an ancient popular assembly, the H. is not mentioned in the earlier Eng. documents. The term H. still exists, but is now of no significance for any local gov. purposes, though under an old statute the H., or any corresponding div., is still liable in certain circumstances for damage caused by riot. The H. as an eccles. div. is now replaced by the deanery, and the H. rate by the co. rate. In coos. occupied by the Danes the term *wapentake* (q.v.) corresponds to the H.

Hundred Years' War, between England and France, 1338-1453, was begun by Edward III of England's attempting to enforce his claims to the Fr. throne and ended by England losing all her Fr. conquests except Calais. In 1328 Charles IV of France d. leaving no male issue, and Edward then claimed the throne in right of his mother Isabella, sister of Charles, although, by the Salic law, women were excluded from the Fr. throne. The Fr. peers refused to acknowledge Edward and accepted Philip of Valois as their king, and Edward then appeared to submit and did homage to Philip for Guienne (Aquitaine) which belonged to the Eng. crown. But when Philip espoused the cause of David II of Scotland against Edward, the latter renewed his claim to the Fr. crown, assumed the title of king of France, and invaded the country with an army to enforce his claim. It is quite clear that throughout Edward was anxious to fight; he saw himself as one of the great warrior-kings of the age of chivalry, and in addition he was probably anxious to keep the Flem. woollen trade in Eng. hands. The chief events in the period from 1339 to

1355 were the defeat of the Fr. fleet off Sluys (1340); the campaign in Brittany (1342); the battle of Crécy (1346), and, in the same year, the beginning of the siege of Calais. David had invaded England as the ally of France, but was heavily defeated by Queen Philippa's army at Neville's Cross (12 Oct. 1346). In 1347 famine compelled Calais to surrender to Edward, and a truce was made with France which was further prolonged by the Black Death. Philip VI d. in 1350 and was succeeded by his son John II, known as 'the Good.' In 1355 the war was renewed as fiercely as before, with France considerably weakened by internal quarrels. Edward advanced from Calais, while the Black Prince ravaged the S. of France. The next events were the battle of Poitiers (19 Sept. 1356), the capture there of King John, and the latter's signed promise to return all the possessions in France which had been held by Henry II, without exacting homage. The Fr. nobility refused to ratify these terms, and Edward again invaded France and besieged Paris. As a result, the treaty of Bretigny (1360) was signed, in which Edward renounced all claim to the Fr. crown and to the provs. of Normandy, Maine, Anjou, and Touraine, but received in return, without obligation of homage, the provs. of Poitou, Guienne, and the tn of Calais, together with 3 million gold crowns as a ransom for King John. War broke out again in 1369, however, owing to the Black Prince's harsh administration in Guienne. The Gascons appealed to the king of France to help them. The Black Prince replied to the challenge by marching towards Paris at the head of a large army. But failing health compelled him to relinquish his command, and thereafter France gradually won back all the possessions, only Bordeaux, Bayonne, and Calais remaining to the Eng. crown (1376). When hostilities were again renewed in earnest it was at the instigation of the Fr. king, who demanded from Henry IV of England the dowry and jewels of Richard II's Fr. widow, Isabella, which Henry retained as part of John's ransom. There was no open declaration of war, but a kind of practical warfare was carried on at sea, and eventually, through the dissensions between the houses of Orleans and Burgundy and the imbecility of the Fr. King Charles, England, posing as the Orleans' champion, won back the sovereignty of Aquitaine, Poitou, and Angoulême (1412). The distracted state of France at this time gave every encouragement to the ambitions of Henry V, who revived all Edward III's claims to the Fr. throne, demanded the restoration of all the possessions held in France by King John, the hand of Charles's daughter in marriage, and a dowry of 2 million crowns. When his demands were refused Henry invaded France and won the battle of Agincourt (25 Oct. 1415), returned to England and renewed the invasion in 1417, with a larger army than before. The Burgundians had gone over to the

Eng. camp, owing to the murder of the duke of Burgundy by the rival faction, and the Fr. king had no option but to acquiesce in all Henry's demands. The treaty of Troyes was signed in 1420, recognising Henry as regent, with the right to succeed to the Fr. throne on the death of Charles. The premature death of Henry V. however, followed by the accession of the infant Henry VI. upset all these schemes, and though the infant Henry was duly proclaimed king of France, the dauphin immediately assumed the title of Charles VII. At Crévant, in 1423, and Verneuil, in 1424, the dauphin met with crushing defeats and was forced to retire across the Loire. In 1428 the regent, Bedford, planned to cross the riv. and marched into those provs. in the S. which still adhered to Charles. At Orleans (1429) the defeat sustained by the Fr. so discouraged them that Charles was on the point of giving up the struggle altogether when the whole situation was changed by the appearance of Joan of Arc. The Eng. were thrown back from Orleans, and Joan helped to crown Charles at Rheims. Though Joan d. at the stake (1431) the Eng. cause continued to wane. The duke of Burgundy went over to the king of France (1435) at Arras. Bedford d. in the same year, and before the new regent reached France Paris fell into the hands of the Fr. king. Soon only Guienne and Normandy remained of all England's Fr. possessions. At the end of a 2-year truce (1444-6) the Fr. overwhelmed Normandy, and then, turning S., captured Guienne. By 1451 Calais alone remained to the Eng. and the long-drawn war was at an end. France emerged from the war ravaged but united into one kingdom as never before; England, however, was, at the conclusion, financially exhausted, politically unstable, and had reaped, in the long run, none of the commercial advantages which Edward III had foreseen for her. See also CRECY, BATTLE OF; EDWARD III; HENRY V; JOAN OF ARC, ST. See E. C. Lodge, *Gascony under English Rule, 1152-1483*, 1926; H. S. Lucas, *The Low Countries and the Hundred Years' War, 1299-1485*, 1932; H. Pirenne, *Histoire de l'Europe*, 1936, and A. H. Burne, *The Crecy War, 1355, and The Agincourt War, 1356*.

Hundredweight, see METROLOGY.

Hungary (Magyar Népköztársaság), rep. of central Europe, bounded N. by Czechoslovakia, NE. by the Ukrainian S.S.R., E. by Rumania, S. and SW. by Yugoslavia, and W. by Austria (qq.v.). It is completely land-locked. Before the First World War it had well-defined frontiers, being enclosed on the N., NE., and E. by the Carpathians (q.v.) and on the S. by the Danube and the Sava (qq.v.). Its area was then some 124,500 sq. m. By the treaty of Trianon (q.v.) in 1920 it lost nearly 70 per cent of its ter., including Slovakia, Ruthenia, Burgenland, Transylvania, the Banat, Croatia-Slavonia, and Fiume (qq.v.). Between 1933 and the

end of the Second World War it regained portions of Slovakia, Ruthenia, N. Transylvania, SE. Baranya, the Backa, and dists. along the Mur. The peace treaty of 1947 re-established the frontiers set out in the treaty of Trianon, but ceded a small dist. (33 sq. m.) opposite Bratislava to Czechoslovakia. Area 35,902 sq. m.

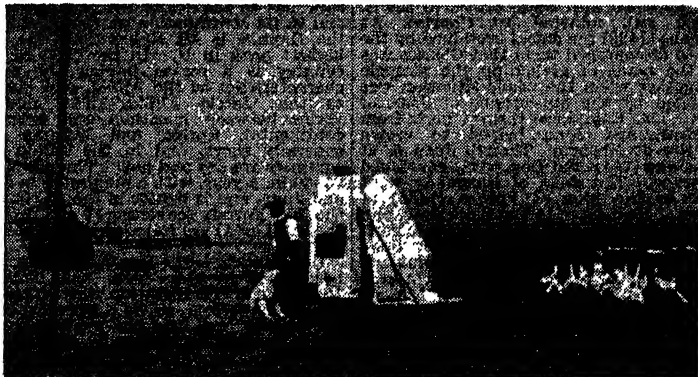
Geography.—The country is bisected N.-S. by the Danube, E. of which lies the Great Hungarian Plain (see ALFÖLD); the Alföld is itself bisected N.E.-S. by the Tisza (q.v.). The predominant physical features of the hilly dist. W. of the Danube are the large lake of Balaton (q.v.) and an Alpine spur, running SW.-NE., comprised of the Bakony (q.v.), Vertes, Gerecse, and Buda ranges; this spur lies to the N. of the Balaton lake, and in its continuation on the E. side of the Danube is Mt. Kékes (3325 ft), the highest peak in H. In the NW. of the country is a region having the same characteristics as the Alföld, and known as the 'Little Alföld.' The climate varies between maritime and extreme continental. Spring and autumn are generally short, and in the Alföld the summers are dry and hot. The rainfall is 25-30 in. a year, with a maximum in May and June, and is lighter in the E. than in the W. Forests (covering 12 per cent of the total area) are found chiefly in the mt. dists.

Constitution.—The Hungarian Rep. was proclaimed in Feb. 1946. On 18 Aug. 1949 a new Constitution was adopted, which declares H. to be a People's Rep. of workers and working peasants. Supreme power is vested in a National Assembly. The National Assembly elects a Presidium from amongst its members, and this body carries out the duties of head of the State. The Presidium is comprised of a president, two deputy presidents, a secretary, and 17 members, and it can annul legislation which infringes the Constitution or is 'detrimental to the interests of the working people.' Elections to the National Assembly are held every 4 years by universal adult suffrage. All citizens are equal before the law, and discrimination on grounds of sex, religion, or nationality is punishable. Private property is guaranteed 'if it does not violate the public interest,' but the prin. means of production are publicly owned. Agric. co-operatives are supported. National minorities are entitled to education in their own languages, and have the right to develop their own cultures. In Feb. 1949 the Working People's party (formed in 1948 by a merger of the Communist and Social-Democratic parties), the Smallholders' party (founded in 1930, and originally a moderate conservative party), the National Peasants' party (founded in 1939 as an agric. Marxist party), the Trade Union Federation, the Federation of Working Youth, the Association of Working Peasants, and the Democratic Women's Association were united to form an organisation called the Hungarian People's Independence Front. In Oct.

1954 a new comprehensive organisation was formed called the Patriotic People's Front; this is an association of representatives of various social, industrial, and agric. groups. The Communist party was reorganised after the end of the uprising of Oct. 1956 and is now known as the Socialist Workers' party.

Local Administration and Justice.—For the purposes of local administration H. is divided into cos. (*megyék*), dists., tns, and bors. The names of the cos. (with the names of their cap. tns given in brackets) are as follows: Pest (Budapest), Fejér (Székesfehérvár), Nógrád (Salgótarján), Komárom (Tatabánya), Győr-Sopron (Győr), Veszprém (Veszprém), Zala (Zala-

Population, Religion, Education, Chief Towns.—The pop. in 1955 was 9,860,000, of which 93 per cent were Magyars (q.v.). Germans (5 per cent) are the largest national minority. Over 6,000,000 of the inhab. are Rom Catholic. In 1955 the Reformed Church had 1,954,000 adherents, and the Lutheran Church 432,000. The Constitution guarantees the right to the free exercise of religion, and all religions have equal standing. The Churches are financed by the State. A State Office for Church Affairs was set up in 1951. In 1950 59 Rom. Catholic orders were dissolved and their property was taken over by the State. In 1949 Cardinal Mindszenty (q.v.), the Rom.



ON THE HORTOBÁGY PUSZTA, NEAR DEBRECEN

E.N.A.

g), Somogy (Kaposvár), Tolna (Tolna), Baranya (Pécs), Bács-Kiskun (Kecskemét), Csongrád (Hódmezővásárhely), Békés (Békéscsaba), Szolnok (Szolnok), Heves (Eger), Hajdu-Bihar (Debrecen), Szabolcs-Szatmár (Nyíregyháza), Borsod-Abaúj-Zemplén (Miskolc), Vas (Szombathely) (q.v.). Local councils are elected for a term of 4 years. The country's system of justice is modelled on that of the U.S.S.R. There is a Supreme Court in Budapest, and there are also co. courts and dist. courts. The Supreme Court acts usually as a court of appeal, but it may act a court of first instance in cases submitted to it by the Public Prosecutor; co. courts are either courts of appeal or courts of first instance. Courts of appeal consist of 3 professional judges, and courts of first instance consist of 1 professional judge and 2 people's assessors. Members of the Supreme Court are elected by the National Assembly, and members of other courts by the dist. or co. councils. Judges' appointments last for 5 or 3 years. In addition to the civil courts there are courts martial, and special courts for dealing with offences affecting communications.

Catholic primate, was sentenced to life imprisonment on charges of treason; he was released during the anti-Russian risings of Oct. 1956 and later sought refuge in the U.S.A. legation. Archbishop Grosz, of Kalocsa, sentenced on similar charges to 15 years' imprisonment, was released in 1956. Elementary education is free and compulsory for children between the ages of 6 and 14. In 1948 the 4322 denominational schools were nationalised with the exception of 9 Reformed, 2 Lutheran, and 2 Jewish secondary schools. In 1950 4 teaching orders were given permission to continue to staff 8 licensed Rom. Catholic schools. There are 4 univs. (at Budapest, Pécs, Szeged, and Debrecen), 2 technical univs. (at Budapest and Miskolc), and higher institutions of technology, agriculture, and economics. The Hungarian Academy of Sciences has been reorganised on the Soviet model. The prin. tns of the country are Budapest (the cap.), Miskolc, Debrecen, Szeged, Pécs, and Győr.

Agriculture.—Since the end of the Second World War large estates and forests have been sequestered for public purposes or to be turned into small

holdings. By 1950 5,599,645 ac. had been treated in this way. In 1953 small-holders were given tax concessions, tax debts were cancelled, and the prices for farm produce were increased; at the same time forced collectivisation ceased. By the end of 1955 some 2,900,000 ac. (supporting about 250,000 families) had been organised in collective farms. There has been extensive development of irrigation schemes in recent years. In 1955 2,680,000 metric tons of wheat were grown, and 2,920,000 metric tons of maize. Other important crops are potatoes, sugar-beet, rye, barley, oats, flax, hemp, rice, tobacco, and paprika. Fine wines are produced (see TOKAJ), and there is much market gardening. Livestock (chiefly pigs, sheep, cattle, and horses) is raised on a large scale. There are rich fisheries on the Danube and Tisza rivs., and on the lake of Balaton.

Industry and Commerce.—In Jan. 1950 a 5-year plan was put into operation with the intention of transforming H. from an 'agrarian industrial country' into an 'industrial agrarian country'. A second 5-year plan was initiated in 1956. The nationalisation of industrial resources was begun in 1946. The chief industries are those deriving from agric. production: they include flour milling, sugar refining, distilling, fruit and vegetable preserving, and meat packing. There are also important cotton, woollen, cement, paper, and petroleum industries. Coal, lignite, and anthracite are mined, and there are bauxite, manganese, and iron mines. Iron and other ores are imported to supply the country's metallurgical and engineering industries. Salt is found in large quantities, and natural gas is utilised from deep borings in many parts of the country. The chief exports are textiles, livestock, and engineering products. In 1954 the total value of exports to W. Europe was \$64,300,000, and of imports from W. Europe \$95,300,000.

Communications.—H. has about 16,000 m. of state and municipal roads, and 4000 m. of inferior roads. There are some 7100 m. of railway track. The riv. navigation company, *Mahart*, had 514 vessels in 1947. There is a Hungarian airline, *Malév*, which carried 101,900 passengers in 1954.

Defence.—The peace treaty of 1947 authorised H. to have an army of not more than 65,000 members, and an air force of not more than 5000 members with 90 aircraft, of which not more than 70 should be combat planes. In 1952 it was estimated that the army numbered about 165,000 men, and that there were 100,000 in the security forces. The army disintegrated after the anti-Russian rising of Oct. 1956. The security police (A.V.H.), which was disbanded in the same month, was re-formed in Jan. 1957 under the designation B.A.C.S.

Currency, etc.—Since 1946 the unit of currency has been the *forint*, which is divided into 100 *fillér*. One *forint* corresponds to 0.0757 grammes of fine gold. There are silver 5-*forint* pieces, and also coins of the value of 2- and 1-

forint and 20-, 10-, and 5-*fillér*. The metric system (q.v.) is in use.

National flag.—The national flag is red, white, and green in horizontal stripes, with, in the centre a red 5-pointed star encircled by wheatstheaves, and, below the star, a golden hammer and golden ear of wheat, crossed.

History.—The emergence of H. as a separate state dates from the 9th cent., with the arrival of the then savage Magyars under Arpad, who were pressing westwards across the Carpathians. St Stephen (d. 1038) instituted the monarchy. It was he, too, who did all he could to encourage his people to embrace Christianity; for he estab. an eccles. polity, and endowed the infant Church by founding many bishoprics and abbeys. He was canonised in 1083. His beneficent reign was followed by a long period of unstable rule, punctuated by civil wars, and the power of the nobility increased. In 1222 the weak king Andrew II was forced to concede the 'Golden Bull' to his barons; by this charter he recognised their right to take up arms against the sovereign should he be guilty of any grave infringement of their privileges and guaranteed that the Diet should be summoned annually.

The hist. of the kingdom of H. is dominated throughout by the wars with Turkey and by the relationship of H. with the sister kingdom of Austria. The Hungarians first waged war against the Saxon kings, Henry the Fowler and Otto the Great, who gained a great victory over them in 954, and from 1241 onwards they were constantly engaged in repelling the persistent advances of the Mongols or Tartars. It was under Louis the Great (1342-82) that they first gained a signal victory over the Turks by the banks of the Maritza. This Louis was king also of Poland (the Arpad dynasty had d. out in 1301, and the Hungarian monarchy was elective) and the importance of such a victory will be appreciated when it is remembered that H. and Poland were the natural bulwarks against Mohammedan aggression on W. Christendom. In 1396 the Sultan Bajazet defeated Sigismund of H. at the battle of Nikopolis, but the disgrace was soon blotted out by the triumphant victories of the soldier-patriot John Hunyadi. The Hungarians did indeed suffer a terrible defeat at Varna (1444), but in 1456, a few months before his death, Hunyadi succeeded in raising the siege of Belgrade and scattering a formidable Ottoman host.

H. reached the summit of her glory under Matthias Corvinus (1458-90), the son of Hunyadi, though his part in the Hussite Wars was to make H. unpopular in Bohemia for centuries to come. His successors were weak, however, and the country therefore fell an easy prey to the Turkish invaders. In 1526 these, under the leadership of Solymán the Magnificent, who had already captured Shabatz and Belgrade, overwhelmed the Hungarians at the battle of Mohacs and slew their king, Louis II. Buda, the cap., was taken, and the splendid library of

Matthias wantonly destroyed. Until the Peace of Carlowitz (1699), which concluded a bitter struggle between Austria and the Porte, the greater part of H. remained in Turkish hands, and a Turkish pasha presided in Buda. By that peace the Ottomans were obliged to yield most of their Hungarian conquests, but it was not till 1716, when Prince Eugene defeated them, that H. finally became independent of the Turks. Sigismund who was king of H. from 1392 to 1437, and who was crowned emperor of the Holy Rom. empire in 1433, is the first link between the crowns of H. and Austria. After Louis's death (1526), to which reference has already been made, the sovereignty of his kingdom was conferred on Ferdinand, archduke of Austria, who was elected emperor in 1558. Thenceforward it remained with the Austrian archdukes: until 1867 it was elective, but in that year it was made hereditary in the Hapsburg family.

H. did not submit to Austrian rule without a struggle. The resentment naturally rising from the loss of a national king was aggravated by the folly of many of the emperors. During the 16th cent. Protestantism made many converts in H. and many of the powerful landowners became Calvinists. Leopold I (1657-1705), in his ruthless attempt to win the whole of H. back to the Catholic Church, was responsible for the wholesale massacre of Protestants and for their alliance in self-defence with their hereditary foes, the Turks. Later, Joseph II (1780-90) alienated the most influential of the Hungarians by endeavouring to ride rough-shod over all their most time-hallowed institutions in his efforts at centralisation. In spite of this, H. remained faithful to the Hapsburgs throughout the Napoleonic Wars. Subsequently, however, Metternich's (q.v.) policy resulted in the suppression of H.'s awakening nationalism and liberalism. As a result, the year of revolution (1848) witnessed an outbreak of intense patriotism in H. The Hungarians, under the famous Kossuth, Deak, and others, made a desperate attempt to regain their former independence. A new constitution was promulgated, and for a time Kossuth was acknowledged as supreme governor. But in the end the Austrians, who had summoned the Russians to their aid, prevailed, and the old despotic régime was resumed. It was not until 1867, after Austria's defeat by Prussia, that the dual monarchy was consolidated and Francis Joseph, emperor of Austria, was crowned king of H. Foreign affairs, the army, and finance were controlled by the Delegations—a body composed equally of Austrian and Hungarian deputies. Otherwise the two nations were distinct, and had their own parliament, executive, and laws. The Hungarians became the most loyal of the Hapsburgs' supporters, but their influence tended to prevent other large racial minorities within the empire from gaining the status which they themselves had at last achieved.

For H. during the First World War, see *AUSTRIA, Austria-Hungary in the First World War*; *WORLD WAR, FIRST*. On 31 Oct. 1918 a revolution broke out in H. with the aim of establishing a rep. The revolution was successful and on 16 Nov. 1918, H. was proclaimed an independent rep. Count Michael Karolyi was chosen as provisional president, but in Mar. 1919 there was a second revolution under Bela Kun (q.v.), who was financed by Russia. This resulted in a Soviet gov. being set up with a dictatorship of the proletariat. Rumania invaded H. and expelled Bela Kun, and, after a short Socialist régime under Peidl, and a presidency under the Archduke Joseph which the Supreme Council in Paris refused to recognise the kingdom was restored in 1920 under Admiral Horthy (q.v.) as regent. Two attempts at restoring the ex-king Karl in 1921 proved abortive. The early years of Horthy's régime marked an improvement in H.'s economic position and there was an attempt at limited land reform; but the political and economic power remained in fact in the hands of a small clique around the regent in which the large landed and business interests were supreme.

The revision of the treaty of Trianon, by which in 1920 H. lost three-fifths of her former ter. and two-thirds of her pop., became thenceforth the dominant factor in Hungarian policy. This Hungarian irredentism aimed at more than the mere recovery of geographical areas, for together with the lost ter. went also a great part of the estates on which the power of the ruling aristocracy was founded. Without such a recovery H. could never aspire to a dominant position in the Danubian Basin nor assume the position of bulwark of the W. against the E., an aspiration particularly of the Magyars who traditionally regarded the peoples E. and S. of Vienna as their cultural and racial inferiors. Mussolini (q.v.) openly sympathised with these aspirations because they seemed to involve the disruption of Yugoslavia, an aim common to Italy and H. The Rome Protocols signed in 1934 between Italy, H., and Austria offered a show of resistance to the nascent menace of Hitlerite Germany, but even before the Ger. annexation of Austria had brought Germany into contiguity with Italy and H., both those countries had decided to compromise with their formidable neighbour in the hope that together they might appear strong enough to secure some advantages. At first this policy appeared to work. In Nov. 1938 H. obtained part of Slovakia and Ruthenia under the first 'Vienna Award'; she obtained the rest of Ruthenia in Mar. 1939. H. joined the Anti-Comintern Pact in Feb. 1939; yet in the same month Horthy suppressed the Hungarian National Socialist party, and when the Second World War began H. remained neutral until June 1941 when she declared war on Russia, claiming that this action was inspired by crusading motives suggested by the anti-Comintern Pact

and divorced from any territorial ambitions. It was hoped in H. that her contribution to the invasion of Russia would be restricted to air reconnaissance and garrison duty; but the Voronezh disaster (see under EASTERN FRONT, OR RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR) of Nov. 1942 altered the aspect of the war in the E. Soon two-thirds of the Hungarian Army—an army built up with the connivance of Hitler in defiance of the Trianon Treaty—was destroyed on the battlefields of the E.; 'mutual' aid, with Germany, indeed meant that Germany always got the best of the bargain. Though H. also obtained ter. from Rumania and from Yugoslavia as a result of her Ger. alliance, it was soon obvious that she had in fact sacrificed her own independence in return for the paper fulfilment of her irredentist ambitions. By 1941 H. was an obvious Ger. satellite. In Dec. 1941 she was forced into declaring war on Britain and the U.S.A.

Throughout the war, Horthy made repeated and largely futile efforts to modify the frequent Ger. demands on H. As Hungarian losses mounted in Russia, and hardships increased at home, the Ger. alliance became more and more unpopular. By the late summer of 1944 the Russians were already in Transylvania and making great progress. The defection of Rumania from the Axis (Aug. 1944) led to a strong movement in H. for coming to terms with the Allies, but the announcement that Russia had promised Transylvania to Rumania was a sufficient inducement to the Hungarians to continue the war. A few days later Russian and Rumanian troops crossed the Rumanian frontier into H. Between 8-10 Oct. they had crossed the Tisa, taken Szeged and advanced to within 60 m. of Budapest and also taken Debrecen. Horthy asked for an armistice but was promptly deposed by a group of Hungarian Nazis under Szalasy, and fled from the country.

Early in Nov. Pest was under siege by a Russian army, while another Russian army, advancing up the Danube from the direction of Yugoslavia, reached Lake Balaton on 5 Dec., and soon the Red Army was closely investing the whole of the cap. Later in the month Gen. Miklos was appointed premier by a Provisional National Assembly, and his gov. declared its readiness to conclude an armistice with Russia and the other countries with which H. was at war and to declare war on Germany. Ger. resistance in Budapest, however, continued till 13 Feb., by which time a large part of the city had been reduced to ruins. During the ensuing few weeks heavy fighting took place between the Russians and the Germans around Lake Balaton, but about 20 Mar. the Germans were forced to give way and within 2 weeks from that time they had been driven out of H., and with them went the Szalasy gov., while that of Miklos now became the effective gov. for the whole of H. (For details of the Russian invasion of Hungary and the siege of Budapest, see

under EASTERN FRONT OR RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR.) At Moscow (20 Jan. 1945) the Provisional National Gov. of Miklos concluded an armistice with the United Nations by which H. undertook to withdraw her troops within the frontiers of H. as they existed at the end of 1937; to pay reparations to Russia, Czechoslovakia, and Yugoslavia to an amount equivalent to 300,000,000 Amer. dollars; while the Vienna Arbitration Awards of 1938 and 1940 assigning N. Transylvania to H. were declared null and void. In Mar. the gov. brought into operation a Land Reform Bill based on the recommendations of the National Peasant party, involving confiscation of all large estates. On 27 Aug. a Russo-Hungarian Trade Agreement was signed providing for a reciprocal exchange of Hungarian goods and for extensive Soviet participation in the control of Hungarian industry, production, communications, and banking. The privileges thereby conferred on Russia provoked a protest from Great Britain and America, and the ratification of the agreement was deferred by the Hungarian Assembly. In the new gov. the Smallholders, Communist, and Socialist parties were all represented, but in the ensuing election held under the Allied Control Commission headed by Marshal Voroshilov, Soviet commander-in-chief, the Smallholders obtained an overwhelming majority; and Zoltan Tildy, leader of the Smallholders, became prime minister. Tildy's coalition gov. issued a decree expelling from H. all Ger.-speaking residents, numbering 500,000, in addition to the Germans, numbering about 250,000, previously ordered to leave. In 1946 (Feb.) H. was proclaimed a rep., with Tildy as president.

H. lost more than two-thirds of her national wealth in the war. She had no capital to replace the losses suffered in animal stock and agric. machinery. At the same time she had to provide for the feeding of a large Soviet army of occupation. Her communication system was destroyed or dislocated during the fierce battles. Her reparation liabilities compelled her to pay \$75,000,000, of which two-thirds were due to Russia and the remaining one-third in equal shares to Czechoslovakia and Yugoslavia. In fulfilment of the commercial agreement of Aug. 1945 with the Soviet Union joint Soviet-Hungarian companies were founded for the exploitation of Hungarian bauxite deposits and oilfields. The two greatest sources of H.'s national wealth were thus put under direct Soviet control and management. Similar companies were founded in respect of Hungarian air communications and riv. navigation. Following the Potsdam agreement all shares in Hungarian undertakings which were in Ger. hands were transferred into Soviet possession. This factor placed Russia in the position of directing the management of many Hungarian industrial undertakings. In Feb. 1947 the Communists, with Soviet connivance, carried out a

coup d'état which destroyed the effective power of the Smallholders' party and made themselves supreme, though the semblances of W. democracy were retained for a little while longer. In Mar. 1947 the U.S.A. sent a note of protest to the Russian chairman of the Allied Control Commission for H. against Soviet interference with the non-Communist Gov. of H. It accused Russia of unjustified interference in the internal affairs of H. by attempting to substitute a Communist dictatorship for the existing freely elected gov., and said that the U.S.A. was 'impelled at this time to express its feeling of concern at the political crisis which has been precipitated in Hungary.' It was apparent, however, that protests alone were by now powerless to save H. from Communism.

The peace treaty of Paris with the Allies was ratified by the H. National Assembly on 2 July 1947 and by President Tildy on 8 Aug. 1947. The Russian occupation troops were then officially withdrawn, only an unspecified number of communications units officially remaining. Another general election took place on 31 Aug. 1947 in which the avowed Communists gained only a quarter of the total votes. The real power, however, was already in their hands, and there followed a rapid elimination of liberal and social-democratic elements and an increasing orientation of H. towards Soviet Russia both in domestic and foreign affairs. In Aug. 1948 Tildy resigned the presidency. In Feb. 1949 the Communists absorbed the remnants of the Smallholders' party, and of various moderate left-wing groups, in a 'People's Independent Front' which, after winning the elections in May, adopted in Aug. a new constitution which made H. a 'republic of workers and working peasants' after the Soviet pattern. Brit. and Amer. protests that the Hungarian Gov. had broken the peace treaty of 1947 by its denial of the freedoms and human rights which it had there agreed to secure were unavailing.

Post-war reconstruction was carried out on Communist lines: industry was nationalised and attempts made to organise agriculture on Soviet patterns. The non-Communist post-war govs. had already tackled the basic question of land reform and redistribution, and this was carried further by the Communists. By May 1954 18 per cent of the arable land was organised in collective farms. In 1950 a 5-year plan designed 'to transform Hungary from an agrarian industrial country into an industrial agrarian country' was put into operation, but it fell far short of its original target. Various concessions have had to be made to both peasants and industrial workers by the regime from time to time, and it is clear that Communism has throughout lacked popular support in H. In spite of vast state building projects, the housing situation remains acute in H., especially in the cities, and has been intensified by the damage caused during the 1956

revolution. By 1949 the State had nationalised the Catholic schools and dispossessed the clergy of 1,000,000 ac., granting the Church only about 27,000 ac. out of H.'s 20,000,000. In 1950 59 Catholic orders with more than 10,000 members were dissolved and their property confiscated by the State.

In Feb. 1949 the traditional conception of liberty of conscience of the whole W. world was ruthlessly violated by the barbarous trial before a 'people's court' of Cardinal Josef Mindszenty (q.v.), archbishop of Esztergom and Prince Primate of H., on charges of disloyalty to the State and 'anti-democratic' activities, followed by conviction and a sentence of life imprisonment and confiscation of all property. The specific charges against the cardinal were, in themselves, no more than instruments of Communist policy devised for the purpose of removing those whom it regarded as its enemies. In essence the trial was really the manifestation of the great conflict between idealist religion, as expressed in Christianity and embodied in the Rom. Church, and materialism as expressed in Communism and embodied in the Soviet-inspired gov. of H. At the beginning of 1948, when the feud between him and the Communists became open battle, the Cardinal refused to give the new Communist state any declaration of loyalty except on the conditions of freedom for all Catholic associations—sev. of which had been banned under the anti-Fascist law—and resumption of diplomatic relations with the Vatican. In the minds of the vast majority of Hungarians he was the undeciphered leader of a political opposition as well as of a religious faith. The trial aroused the strongest protests in W. Europe and in the U.S.A. There never was a chance from the moment of his arrest that the cardinal might be acquitted or set free for the purpose of the 'people's courts,' whether in the Soviet Union or in the Communist countries around, was not to try their prisoners for guilt or innocence but to arraign and condemn the enemies of the Communist state, and proceedings of this kind were an indispensable part of the process of breaking down the opposition wherever Communism had seized power. The appointed end of a conviction following on a 'confession' was, as usual, extorted by third-degree methods, the familiar prelude at this trial to the inevitable sentence. Pope Pius XII excommunicated all associated with the trial.

During the early 1950's the Communists increased their grip on H., and there was a series of spectacular 'espionage' trials, sometimes involving foreign nationals, as in the case of the Brit. businessman, Edgar Sanders, who was sentenced to 15 years' imprisonment for espionage in Feb. 1950, but released in Aug. 1953 after continuous Brit. pressure on his behalf. The power of the secret police in H. became notorious. In May 1953 elections were held on the Soviet pattern; there was a single list of gov.-sponsored candidates and these

obtained over 98 per cent of the total votes cast. But popular discontent was widespread, and the country's economic position most unstable. In July 1953 Imre Nagy (q.v.) became premier in place of Rakosi; though a Communist, his policy was more moderate than that of his predecessor. In April 1955 Nagy was replaced by Hegedus, and pressure was again applied.

In Oct. 1956 popular discontent in H. reacted suddenly and violently to the example set by Poland, who had achieved

lence on both sides were extreme. At first it seemed that the revolution would succeed. The Russians appeared to be withdrawing from H. and the Hungarians had themselves effectively disposed of most of their own pro-Russian fellow countrymen, in particular of the hated secret police. But the very success of the revolt sealed its ultimate fate: for it was soon evident that though they might have been prepared to make minor concessions, the Russians were not prepared to see one of their satellites throw off all vestiges of



THE RISING OF OCTOBER 1956

Camera Press

All that remained of the statue of Stalin after the rising

peacefully almost overnight some measure of independence from Russia (see POLAND, *History*). On 23 Oct. a huge crowd in Budapest demanded the withdrawal of Russian troops from H. and the return to power of Nagy, who had been readmitted to the Hungarian Communist party 10 days earlier. He became premier on the 24th; 8 days later he reformed his gov., including non-Communists in it, and promised that there would indeed be a Russian withdrawal. Soon after this Cardinal Mindszenty returned, a free man, to Budapest. On 1 Nov. the Hungarian Gov. renounced the Warsaw Pact.

The anti-Russian rising in Budapest had been followed by spontaneous national risings in many other parts of H. It was a rising in which young people of all classes, of an age-group which had known no other gov. except the Communist one, were predominant. Bitterness and vio-

lence on both sides were extreme. At first it seemed that the revolution would succeed. The Russian forces advanced to crush the rebels; on 4 Nov. Budapest was heavily bombed by Russian planes. Nagy was replaced as premier by Kadar, a pro-Soviet Communist. Nagy himself took refuge in the Yugoslavian Embassy, but was subsequently abducted from there by the Russians and kept in custody by them. In June 1958 it was announced that he had been executed for 'high treason'.

Within a few days the Hungarian revolt was over, utterly crushed by the Soviet armies. Thousands of refugees poured across the frontiers into Austria and Yugoslavia, to be given asylum in various countries in W. Europe and in the U.S.A. Sev. thousand eventually came to Britain. In H. the Kadar gov. acted ruthlessly to suppress all traces of revolt; and during 1957/8 many of the alleged leaders of the rebellion were brought to

trial and sentenced to death or to long periods of imprisonment.

While the rebellion was still in progress the U.N. Security Council condemned Russia's intervention in H., but this was vetoed by Russia. The General Assembly called on Russia to withdraw her troops from H., but this was disregarded. Russia maintained that she had been invited by the Hungarian Gov. to assist in suppressing a reactionary rising. In April 1968 Khrushchev visited H. and declared, in reference to 1956: 'We could not remain neutral when reactionary Fascists raised their swords against Hungarian workers.' He added that Russia would intervene in any similar situation in the future, in H. or elsewhere.

Language.—Few languages offer more fascination to the philologist than Hungarian. Until the 17th cent. it seemed a pure anomaly, for it was clearly not even a distant cousin to the neighbouring German, Rumanian, Czech, Slovak, or Slavonic. In 1769 an astronomer, John Sajnovics, visited the Laplanders in Norway, and was impressed by the similarity of their language to his own. So vivid was this impression that he forgot for the moment about his astronomy and wrote instead a book (in Lat.) to demonstrate the affinity between the 2 tongues. Since his day many other facts have come to light which go to prove that Magyar (see MAGYARS) together with Lappish and Finnish form the westernmost European spearheads of the great Finno-Ugrian linguistic group. Here follows a brief enumeration of the most striking peculiarities of Magyar: (1) It is a language of affixes: *Atyádmért* means 'for my father,' 'm' being 'my' and *ért* 'for.' (2) The active verbs have definite and indefinite forms: *Idtom* means 'I see him, or it,' and *Idtok* merely 'I see.' (3) There is no gender: 'he,' 'she,' and 'it' are not distinguished. (4) Extra syllables give the verb a potential, causative, or frequentative sense: *verhet* means 'he can beat'; *veret*, 'he causes to beat'; *veregget*, 'he often beats.' (5) Nouns have possessive suffixes, which vary according to number: *tollunk*, 'our pen'; *tollaink* 'our pens.' Magyar is, moreover, rich in verbal derivatives, has a copious vocabulary, and is musical—and therefore adapted to poetry—by reason of the harmony of its consonants and vowels.

LANGUAGE: S. Simonfy, *Die ungarische Sprache: Geschichte und Charakteristik*, 1907; Arthur B. Yolland, *Dictionary of the Hungarian and English Languages*, 2 parts, with compendium of Hungarian Grammar, 1924; L. Országh, *Angol-Magyar kézikönyv*, 1950, *Magyar-angol szótár*, 1953; A. H. Whitney, *Colloquial Hungarian*, 2nd edition, 1950.

Literature.—Before the end of the 18th cent. there was comparatively little Hungarian literature. The supremacy of Lat., which was, in fact, spoken in the National Assembly up to 1825, the Mongol invasion of the 13th cent., the Turkish wars and occupation of the 16th and 17th cents., and a Germanised educ.

class, all contributed to the neglect of Hungarian as a literary language. The earliest surviving piece of Hungarian prose is the *Funeral Oration* of the early 13th cent. Its importance is chiefly philological. The first notable name in Hungarian literature is that of Baron Bálint Balassi (1554-94) (q.v.), whose *Flower Songs* have a genuine freshness and charm. In the next century Miklós Zrínyi (1620-64) sang the exploits of his great-grandfather in the epic *Zrínyiads*. His contemporary, István Gyöngyössi (1620-1704), wrote long, narrative poems—the best is probably *The Venus of Mordny*—which contain passages of true poetry. Prose in the 17th cent. is represented by Peter Pázmány (1570-1637), archbishop of Esztergom, who carried on religious propaganda in a vigorous, popular Hungarian.

In the 18th cent. the increasing influence of Vienna and the court as a centre of culture brought about a further decline in the status of Hungarian. The formal verses of Ferenc Faludi (1704-79) constitute the greatest poetry of the period. Of more importance (and literary value) are the prose *Turkish Letters* of Kelemen Mikes (1690-1761) (q.v.). Towards the end of the century a group of Hungarians at the court in Vienna attempted to revive Hungarian literature by introducing ideas from France and Germany, but even their best writer, György Bessenyei (1747-1811), had little success and the repression and increasingly severe censorship which followed the Martinovics conspiracy of 1794 stopped all further progress for a time. Among the political prisoners was Ferenc Kazinczy (1759-1831) (q.v.), who was held till 1801. By his encouragement and criticism he laid the foundations of modern Hungarian literature. Under his immediate inspiration Daniel Berzsenyi (1776-1836) and Ferenc Kölcsey (1790-1838) began to write. The former was a gifted poet, skilled in classical verse forms. The latter is best known for his *Hymn* which became the national anthem. Although he lived in the 18th cent., Mihály Csokonai Vitéz (see CSOKONAI) is hardly of it. His vigorous lyrical poetry looks forward to the great age of Hungarian literature. His greatest work, *Dorottya*, 1804, is, however, a comic epic, which owes something to Pope's *Rape of the Lock*.

In 1821 the first number of the almanac *Aurora* appeared. It had been founded by a group of younger writers, including playwright Károly Kisfaludy (1788-).

Its nationalism and patriotism mark a break from the tradition of Kazinczy. This new tendency in Hungarian literature found its first great exponent in Mihály Vörösmarty (1800-1855) (q.v.), whose classical epic *The Flight of Zala* deals with semi-mythical early Hungarian hist. It made his reputation as a poet, but his greatness to-day is more firmly secured by his lyrics. His younger contemporary, Sándor Petőfi (1823-49) (q.v.), ranks as one of the great poets of

Europe. His patriotic and love poems have a freshness and passion hitherto unknown in Hungarian. His friend, János Arany (1817-82) (q.v.), is his only close rival. The epics *Toldi*, *The Death of Buda*, and the savagely satirical *Gypsies of Nagyvada* are great by any standard. Arany was also an inspired lyricist. The fourth great poet of the 19th cent. was János Vajda (1827-97) (q.v.), whose lonely, unhappy life is reflected in much of his philosophical and love poetry.

Among the novelists of the period, Miklós Jósika (1796-1865) (q.v.), an admirer of Scott, and József Eötvös (1813-71), must be mentioned. Eötvös's chief work is the very long, satirical *Village Notary*. A greater and more prolific novelist was Mór Jókai (1825-1904) (q.v.), many of whose novels are available in Eng. and can still be read with enjoyment. Later 19th cent. novelists are Kálmán Mikszáth (1847-1910) (q.v.), whose humorous novels are often marred by poor construction, and Géza Gárdonyi, whose *Stars of Eger* depicts II. in the Turkish wars.

Hungarian literature has always been weakest in plays, but the historical drama *Bánk Bán* of József Katona (1791-1830) and Imre Madách's (1823-64) (q.v.) philosophical *Tragedy of Man* should be mentioned.

Poetry, which had made little progress since Arany and Vajda, revived magnificently at the end of the century with Endre Ady (1871-1915) (q.v.), whose impressionist verse has gained him a firm place as the greatest poet of recent years. He was, from its inception, closely associated with *Nyugat* (*West*), a literary magazine which aimed at linking Hungarian intellectual life more closely with W. European thought. Two other eminent contributors were Babits and Kosztolányi. Mihály Babits (1883-1941) was a poet of great learning. His *History of European Literature* bears impressive witness to wide and deep reading, and his trans. of the *Divina Commedia* gained him the San Remo prize. His own verse is perhaps a little too formal and highly polished. Dezső Kosztolányi (1885-1939), wrote, in the main, more simple, direct poetry than Babits and his prose usually has a clarity too rarely found in Hungarian. The verse of Attila József (1906-37) reflects his life in poverty in industrial Budapest. His true greatness was not appreciated until after his death.

In the novel and short stories Ferenc Herczeg (1863-1954) (q.v.) and Jenő Heltai (1871-) with their lightness of touch, look to W. European models. Gyula Illyés (1902-) (q.v.) is much more Hungarian in style and subject. His semi-autobiographical *People of the Puszta* gives a fine picture of the feudal life which, until recently, prevailed on the great Hungarian estates.

Probably the best-known modern writer outside Hungary is Ferenc Molnár (1878-1952) (q.v.), most of whose plays, including *Liliom*, are available in Eng.

The novelists Lajos Zilahy (1891-) and Jolán Földes (1903-) have both gained higher reputations in Eng. trans. than they have in Hungarian.

The 20th cent. has been a period of great richness in Hungarian literature. Activity has d. down since the war, but there is no doubt that the great traditions of Hungarian letters can survive even the disasters of 1956. See Emil Reich, *Hungarian Literature*, 1906; Frederick Riedl, *A History of Hungarian Literature*, 1906; articles in the *Enciclopedia italiana*, 1929-39; G. F. Cushing, *Hungarian Prose and Verse*, 1956; Watson Kirkconnell, *The Magyar Muse*, 1933, and *Little Treasury of Hungarian Verse*, 1947; and Béla Menczer, *A Commentary on Hungarian Literature*, 1956.

Art.—H. possesses a beautiful national art, but much of importance from the Middle Ages was destroyed in the wars with the Turks. The flat-roofed basilicas often show Lombardic and Byzantine influence in their decorative details. The abbey church at Ják (13th cent.) shows the transition to the Gothic style which came to H. from France. Among other important buildings dating from the 14th to 16th cents. are St Michael's Chapel and the cathedral in Košice (now in Czechoslovakia), the Black Church in Brassó (Transylvania, 1383-1424), the Benedictine Church in Sopron, and a number of castles built by kings and nobles, e.g. that of Vajdahunyad. Biblical subjects began to be used in the 12th cent. (e.g. the crypt in Pécs) and there are tombs and wooden and bronze sculptures which date from the 14th cent. (e.g. the statue of St George in Prague by the brothers Kolozvári).

Renaissance art-forms were, with few exceptions, imported from Italy rather than of native growth, and little has been preserved. There was, however, a native revival in the Baroque period, which produced somewhat ostentatious churches (the cathedrals of Győr, Nyitra, Kalocsa) and palaces, and many W. H. ns, such as Győr and Pozsony received their present stamp at this time. Many Hungarian artists, such as the 2 painters Mátyók and Bogdán, worked abroad; whereas much was done in H. by Austrian artists. The representative architects in the classical period were M. Pollack (National Museum, Budapest) and J. Hild, who designed the cathedral at Eger. The second half of the 19th cent. saw the creation of the main buildings of Budapest: the parliament (I. Steindl), opera (M. Yul), Kurie (A. Hauszmann), etc. Other architects were F. Schulek, G. Petschacher and Ö. Lechner, who exerted a considerable influence on the succeeding generation (K. Kós, E. Thormaehlen-Wiegand). In sculpture the classical work of I. Ferenczy was followed by that of A. Strobl, G. Zala and A. Huszár, which showed a tendency towards allegory. E. Teks and I. Damkö produced mainly bronze and terracotta figures. Trends towards realism were represented by such artists as L. Petri,

I. Pásztor Z. Kisfaludi-Strobl and I. Szentgyörgyi, and towards a stylised formalism by I. Simay, P. Pátzay, Ö. F. Beok, M. Vedres, E. Kalmár, G. Csorba, and A. Kocsis.

Painting, after its early beginnings in the Byzantine style, made great developments from the 14th to the beginning of the 18th cent. A fine example is the altar-piece at Esztergom. In the first half of the 19th cent. painting, influenced by Vienna, moved from classicism to romanticism (Markó Barabás). After 1848 national hist. became the main theme (Madarász, Benczúr). Chief among genre and landscape painters were Pál Munkácsy, Mészöly, Mednyánszky. Fr. naturalism and impressionism influenced Iványi-Grunwald, Ferenczy, Thorma, Réti, Vassary, Fényes, Csók, Kernstock, and Rippl-Rónay among others. More recently painters such as Márfy, Czöbel, Rudnay, Egrý, and Bernáth have come to the fore. Though it has derived much from Paris, the present aim of Hungarian painting is, it would seem, to render 'social reality' and the E. European atmosphere.

See D. Malonyay, *Ungarische Volkskunst*, 5 vols., 1907-22; K. Divald, *Histoire de l'art hongrois*, 1927; *Old Hungarian Art*, 1931; A. Hekler, *Ungarische Kunstgeschichte*, 1937; J. Kopp and C. Rosner, *Introduction to Hungarian Painting*, 1948.

Hungarian Music. The music of Hungary occupies a curiously anomalous position in Europe, having for long been derived by composers, not from the true native Magyar folk music, but from that of the Gypsies, which was an alien element; and so was, up to a point, the *verbunkos*, a type of recruiting-song (the word is a corruption of the Ger. *Verbung*), cultivated artistically by such fiddler-composers as Bihari, Csermák, and Lavotta. The operas on national subjects by Erkel (q.v.) were connected with the latter, and Liszt's 'Hungarian' rhapsodies were based entirely on Gypsy music. It was not until modern researchers, including 2 eminent composers, Bartók (q.v.) and Kodály (q.v.), went in search of the genuine native peasant songs and dances that H. M. acquired truly national characteristics. Some of its chief representatives (e.g. Dohnányi q.v.) do not exhibit them markedly, and others still show a Gypsy strain; but that only means that the school of composers is diversified, as that of any country properly should be. See E. Haraszti, *La Musique hongroise*, 1933, and *A Companion to Hungarian Studies*, 1943; Z. Kodály and D. Bartha, *Die ungarische Musik*, 1943.

See also AUSTRIA; BALKAN PENINSULA; BUDAPEST; DANUBE, RIVER; MAGYARS.

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artney, *Hungary (The Modern World Series)*, 1934; C. de Grunwald, *Portrait de la Hongrie*, 1939; Zoltan Baranyi, *Ungarn: Das Antlitz einer Nation*, 1941; *Hungary* (a guidebook), Budapest, 1956.

HISTORY: F. Eckhart, *A Short History of the Hungarian People*, 1931; O. Zarek, *The History of Hungary*, 1939; G. Palocsy-Horvath, *In Darkest Hungary*, 1945; A. J. P. Taylor, *The Habsburg Monarchy*, 1948; F. Nagy, *The Struggle behind the Iron Curtain*, 1948; M. Karolyi, *Memoirs of Michael Karolyi*, 1956; G. Mikos, *The Hungarian Revolution*, 1957.

Hunger, indefinite sensation usually referred to the stomach, but also combined with a non-localised feeling of weakness or faintness. Normal H. is not of necessity strictly periodic, but training may result in its recurrence becoming regular. In its earliest stages no suffering accompanies it, but later a gnawing pain sets in at the epigastrium, followed by weakness, and finally by the delirium of starvation. The general faintness is normally removed by the introduction of nutriment into the alimentary tract, even though the stomach is not used, as in the administration of easily assimilated food in the form of nutrient enemata. The almost immediate alleviation of suffering may be caused by the free secretion of gastric juice which may be brought about by the ingestion of even indigestible substances. Abnormal H. accompanies some diseases, particularly those associated with wasting, such as diabetes mellitus (q.v.). Other diseases cause morbid appetites, such as the craving for chalk and lime, etc.

Hungerford, par. and tn of Berkshire, England, on the Wilts border. The ant. name was Ingleford, meaning 'Ford of the Angles.' It is situated on the R. Kennet, 9 m. NW. of Newbury and 27 m. SW. of Reading, and is a horse-racing and fishing centre. Pop. 3000.

Huningue, or **Huningen**, Fr. tn in the dept of Haut-Rhin, on the l. b. of the Rhine, 3 m. N. of Basel. It is a former fortress, and was an important riv. port. Pop. 2000.

Huns (Lat. *Hunni*), wild nomadic people who became historically important in the early centuries AD. In the confused narratives of the Dark Ages historians can distinguish 4 migratory tribes to which the name of H. has been applied: (1) The Magyars were Hunnish invaders of Hungary from AD 898, whilst the race of modern Hungarians was probably formed by these Magyars coalescing with the Kumans and other hordes, who had preceded them in the march westwards. (2) The White H., or Ephialtes, inhabited Bactria and the tracts between the Oxus and the Caspian in the days of Attila's conquests. In 454 they inflicted a crushing defeat on their Persian neighbours under Peroz, who was slain in battle, but during the following century their power was broken by the aggressive Turks. (3) The Huns, who made inroads into India, were contemporary with the Ephialtes, and undoubtedly belonged to the same wave of

barbarian migration. (4) The most famous were the H. who from AD 372 to 453 were continually threatening the Rom. empire. An army of H., under Balamir, overcame the Alani, who dwelt between the Volga and the Don, completely disorganised the empire of the Ostrogoths (Greutungi), and finally routed the Visigoths (Tervingi). These tribes were driven to seek new homes between the Pruth and Danube, but were later driven by the H. to beyond the Danubian frontier. Two facts show that Rom. supremacy was already on the wane: emperors had begun to enlist the arms of the Hunnish invaders against other foes, and in 432 Theodosius II agreed to buy peace from Rhuas or Rugulas, their king, by an ann. payment of 350 lb. of gold. Attila and Bleda succeeded Rhuas, their uncle, and were so formidable as to secure a double tribute. Under these chiefs the H. laid waste Scythia and Media, threatened Persia, sacked the Rom. city of Margus in the E. (441) and Sirmium in the W. In 445 Attila stood with his victorious armies before the walls of Constantinople; in 451 his progress westward across the Rhine was stayed only after a terrible battle on the Catalaunian plains (near Méry-sur-Seine), and in the following year, after razing Aquileia and the cities of Venetia, Attila was confronted with Pope Leo I on the banks of the Mincio—an interview which ended in a retreat of the H. beyond the Alps. Next year Attila d., and in 454 the Goths, Gepidae, and Suevi avenged his insolent victories near the R. Netad in Pannonia, where 30,000 H. were slain. The Hunnish nation never survived this calamitous defeat; their tribes dispersed, some settling in the Dobruja, others in Dacia, and others, again, returning to their homelands in the S. steppes of modern Russia. See M. A. Ozaplicka, *Turks of Central Asia*, 1919; R. Saffet, *Contributions à une sincère histoire d'Attila*, 1934; E. H. Parker, *A Thousand Years of the Tartars*, 1934; W. M. MacGovern, *Early Empires of Central Asia*, 1939; E. A. Thompson, *History of Attila and the Huns*, 1948.

Hunstanton, seaside resort of Norfolk, England, situated on the Wash, 15 m. NE. of King's Lynn. H. has a pier, a wide expanse of sand, and golf links. Pop. 3600.

Hunt, Alfred William (1830–96), painter, b. Liverpool, son of Andrew H., a landscape painter. He won the Newdigate Prize poem in 1851. He exhibited landscapes in oil and water-colour at the Royal Academy, and took up painting professionally in 1861. His best pictures are in water-colour. He is represented in the Tate Gallery, London, and the Walker Art Gallery, Liverpool. See F. Wedmore, in *Magazine of Art*, 1891.

Hunt, Henry, known as 'Orator Hunt' (1773–1835), Brit. political agitator, the son of a Wilts farmer, on whose land he until he became interested in Ra. liam. For some years he worked Cobbett (q.v.), and in 1810 they

shared the same cell in gaol. He more than once stood for Parliament, but was not elected until 1830, and lost his seat 3 years later. He presided over the meeting in St Peter's Field, Manchester, in Aug. 1819, which, owing to the intervention of the soldiery, is known as the Peterloo Massacre (q.v.). He gave up politics after 1833. He pub. his *Memoirs* in 1820, and his *Correspondence* appeared in the same year.

Hunt, James Henry Leigh (1784–1859), essayist and poet, b. Southgate, Middx, son of a clergyman. He was educ. at Christ's Hospital, London, to which school he went from 1792. He was a shy, nervous, sensitive lad, and at a very early



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age he read poetry and began to write verses, which his father collected and pub. in 1801 under the title of *Juvenilia*, or *A Collection of Poems written between the ages of twelve and sixteen*, by J. H. L. Hunt. Owing to the elder H.'s energy, a large subscription was obtained, and the little book passed through 4 eds. in 3 years. The quality of the verse was not such as to merit much success. In 1805 H. began to contribute dramatic criticism to the *News*, and a selection of his articles was reprinted in book form 2 years later. In 1808 H. and his brother John started a newspaper, the *Examiner*, and for 13 years wrote largely in its columns on many subjects, taking part not only in its literary side, but also contributing political leaders. His persistent attacks on the character of the Prince Regent led to a gov. prosecution of the brothers in 1812, and they were sentenced to 2 years' imprisonment. It was while he was in prison that Thomas Moore introduced H. to Byron, which was the beginning of the famous friendship between these men. At this time, too, H. made the acquaintance of Keats, and introduced him to Shelley. He pub. sev. vols. of poems, including *The Story of Rimini*, 1816. In

1822 he went to Italy to join Byron, with whom later he quarrelled. In 1825 he returned to England, and 3 years later he pub. *Lord Byron and some of his Contemporaries*, which brought a hornet's nest about his ears.

All this time he was working very hard, contributing to the newspapers, editing periodicals, writing dramatic criticism and book-reviews, and every now and then issuing a book. He wrote a novel, *Sir Ralph Esmer*, 1832, and a vol. on *Christianism*, and he reprinted the best of his papers which had appeared in the *Indicator* and the *Companion*, 1830. His play *A Legend of Florence* was produced at Covent Garden in 1840. Four years later appeared one of his best-known books, *The Town*, and in 1855 *The Old Court Suburb, or Memorials of Kensington*, reprinted 1902, when it was ed. by Austen Dobson. He had earlier, in 1850, pub. his delightful *Autobiography*, which is deservedly the most popular of all his works, and won high praise from Carlyle. It was as a poet that H. desired to achieve fame, but it cannot be said that his ambition was ever satisfied. His verse was easy and agreeable, but it lacks dignity; he had not the lyrical gift, and has never taken the place he desired to fill in the roll of Eng. poets. It is as an essayist that he has his claim to remembrance. In this branch of letters he does not, of course, rank with Lamb or Hazlitt, but he has undoubtedly an individuality and a charm of his own. His wide reading and his knowledge of the world gave him ample scope for finding suitable subjects for his innumerable papers, but he is never happier than when writing of 'My Books,' or discoursing about London, or describing the country. His *Autobiography*, and his *Correspondence*, ed. by his eldest son, 1862, are the prin. authorities for his life. The character of Harold Skimpole, the sponging amateur artist, in Dickens's *Bleak House*, was founded on H. and had to be altered on account of its close resemblance. See lives by E. Blunden, 1930, and L. Landré, 1936.

Hunt, Sir John (1910-), Brit. Army officer and leader of the successful Everest (q.v.) expedition of 1953, educ. at Marlborough College. He has served with the Indian Police, the 11th Battalion King's Royal Rifle Corps, the 11th Indian Infantry Brigade, Joint Planning Staffs Middle East Land Forces, W. Europe Commander-in-Chief's Committee, Allied Land Forces Central Europe, General Staff H.Q.I. (Brit.) Corps, and the Staff College. He has climbed in Britain, the Alps, the Near East, and the Himalaya. Success on Everest was in large measure due to his meticulous planning and fine leadership. He was knighted in 1953. In 1956 he was appointed director of the Duke of Edinburgh's Award. He has written *The Ascent of Everest*, 1953, and *Our Everest Adventure*, 1954.

Hunt, Richard Morris (1828-95), Amer. architect, b. Brattleborough, Vermont. He studied at the Ecole des Beaux Arts in Paris. In 1854 he was put in charge of

the buildings connecting the Tuileries with the Louvre, and designed the Pavillon de la Bibliothèque. Returning to New York in 1855, he designed the Lenox Library, the Stuyvesant and Tribune buildings; also public buildings in Princeton and Yale. He obtained the gold medal of the Royal Institute of Brit. Architects for his Administration Building at the Chicago Exhibition (1893). He did much to raise Amer. architecture in the opinion of other countries, and helped to found the Amer. Institute of Architects.

Hunt, Thomas Sterry (1826-92), Amer. chemist and geologist, b. Norwich, Connecticut. He wrote a remarkable 'Essay on the History of the Names Cambrian and Silurian' (*Canadian Naturalist*, 1872), and his works include *Chemical and Geological Essays*, 1875, *Mineral Physiology and Physiography*, 1886, *A New Basis for Chemistry*, 1887, and *Systematic Mineralogy*, 1891.

Hunt, Violet (1866-1942), novelist, b. Durham. A daughter of A. W. H., a Pre-Raphaelite painter, she grew up in the Rossetti circle. At first she studied art, but changed to writing, her earliest novel, *The Maiden's Progress*, appearing in 1894. Others are *Unkind*, *Unkind!* 1897, *Sooner or Later*, 1904, *The Wife of Attamont*, 1910, *The Doll*, 1911, *The House of Many Mirrors*, 1915, *The Last Ditch*, 1918, and *The Tiger Skin*, 1924; she also wrote 2 series of *Tales of the Uneasy*, 1910, 1925. *The Wife of Rossetti*, 1932, is biographical, and *The Flurried Years*, 1926, a book of memoirs, gives interesting accounts of the famous people she met.

Hunt, William Henry (1790-1864), water-colour painter, b. London, and studied with John Varley (q.v.). He was a prominent member of the Society of Painters in Water Colours. Many examples are in the Victoria and Albert Museum, South Kensington. He painted some landscapes and humorous rustic subjects but is mainly noted for the minutely detailed water-colours of fruit and flowers to which he devoted his later years. These showed great skill but were extravagantly overpraised by John Ruskin.

Hunt, William Holman (1827-1910), painter, b. London, joined the Royal Academy schools (1844), and first exhibited at the Academy in 1846. He met Millais and Rossetti (qq.v.), and in 1848, together with them, was a founder of the Pre-Raphaelite Brotherhood (q.v.). H.'s earlier pictures include 'Hienzi,' 1848, 'Valentine and Sylvia,' (greatly praised by Ruskin), 1851, 'A Hireling Shepherd,' 1852, 'Strayed Sheep,' 1852, and 'Claudio and Isabella,' 1853. In 1854 came, perhaps, his greatest and certainly most successful religious picture, 'The Light of the World,' presented to Keble College, Oxford, by the purchaser, Mr Combe, of which a modified replica was painted in 1904 and exhibited in the chief cities of the Brit. empire. A visit to Palestine produced 'The Scapegoat,'

1856, a meticulous study of the scenery of the Dea Sea; 'The Finding of Our Saviour in the Temple,' 1860, now at Birmingham; 'The Shadow of Death' (exhibited 1873), representing a shadow of the Crucifixion thrown on the workshop wall by the stretched arms of Jesus, is at Manchester; 'The Triumph of the Innocents,' of which there are 2 pictures, at Liverpool and Birmingham, begun in 1875, was not finished till 1885. His best-known later picture is 'May Day on Magdalen Tower, Oxford,' 1891. H. remained to the last a fervent adherent to the Pre-Raphaelite conception of 'truth to nature.' The best statement of his ideals and of the inner hist. of the movement is in his *Pre-Raphaelitism and the Pre-Raphaelite Brotherhood*, 1907. He received the Order of Merit, and was buried in St Paul's. See Ford Madox Brown, *Pre-Raphaelite Diaries and Letters*, 1900; J. Phythian, *Pre-Raphaelite Brotherhood*, 1906; L. Housman, *Pre-Raphaelites in Art and Poetry*, 1933.

Hunter, George (1863-1946), Scottish missionary, b. Aberdeen. At 26 he left Scotland, and set out for Chinese Turkestan. At Urumsai, cap. of Chinese Zungaria, he built himself a rough home; and for many years he travelled in his little Chinese cart on the trade routes across the high plateau, conveying the Scriptures trans. by him into the various local dialects. In H.'s early days Chinese wore pigtails; so he grew his own, and wore a simple blue gown. Unselfish and devoted, he had great influence on the wandering folk of Chinese Turkestan. In 1939 his presence on the border of the Soviet Union aroused the suspicion of the Russian authorities; he was arrested as a 'secret agent,' and kept under terrible conditions in a Soviet gaol. Released and flown back into China proper, he d. in 1946. See Mildred Cable and Francesca French, *George Hunter, Apostle of Turkestan*, 1948.

Hunter, John (1728-93), surgeon and anatomist, b. Long Calderwood, East Kilbride, Lanarkshire, younger brother of Wm H. (q.v.), whom he assisted in dissection in London (1748). He attended Chelsea Hospital under Cheselden, 1750, became a pupil at St Bartholomew's Hospital, 1751, surgeon's pupil at St George's Hospital, 1754, house surgeon there, 1756. Matriculated St Mary Hall, Oxford, 1755. In 1761 he took part in the expedition to Belleisle and in 1762 served with the Brit. Army in Portugal, acquiring considerable knowledge of gun-shot wounds and inflammation. In 1763 he started to practise in London but devoted his spare time to experiments, to lecturing on anatomy and physiology, and to building up his famous museum. He became surgeon to St George's in 1768, surgeon-extraordinary to the king in 1776, and deputy surgeon-general to the army in 1786. H. came to London a raw Scottish youth, he d. one of the 3 greatest surgeons of all time; he found surgery merely a technical method, he left it a branch of scientific medicine firmly

grounded in physiology and pathology; he was the founder of surgical pathology. He collected over 13,000 specimens in his museum, which later passed to the Royal College of Surgeons; much of it was destroyed in an air-raid in 1941. H. was buried in St Martin-in-the-Fields church but in 1859 his remains were trans. to Westminster Abbey. Besides many contributions to the *Philosophical Transactions* and other learned journals, H. wrote 4 masterpieces: *A Treatise on the Natural History of the Human Teeth*, 1771-8; *A Treatise on the Venereal Disease*, 1786; *Observations on Certain Parts of the Animal Oeconomy*, 1786; and *A Treatise*



JOHN HUNTER

on the Blood, Inflammation and Gun-Shot Wounds, 1794. His *Works*, ed. by J. F. Palmer, 4 vols., 1837, include (vol. i) a life by D. Ottley; see also lives by S. Paget, 1897, and S. R. Gloyne, 1950, and entries under William Hunter.

Hunter, William (1718-83), anatomist and obstetrician, b. Long Calderwood, East Kilbride, Lanarkshire, elder brother of John H. (q.v.). He studied at Glasgow, Edinburgh, and St George's Hospital, London. He built the famous anatomical school in Great Windmill Street, Leicester Square, and taught there. He also became the leading obstetrician of his time and attended Queen Charlotte in that capacity. His greatest work, a labour of 30 years, was his *Anatomy of the Human Gravid Uterus*, 1774, containing 34 life-size copper plates; it was reprinted in 1851. H. was the first prof. of anatomy at the Royal Academy (1768); he was president of the Medical Society of London (1781). He bequeathed his museum of pictures, portraits, prints, engravings, books, coins, minerals, etc., to Glasgow Univ. with an endowment of £8000. See G. C. Peachey, *Memoir of*

William and John Hunter, 1924; J. Oppenheimer, *New Aspects of John and William Hunter*, 1946.

Hunter, see HORSE.

Hunter River, riv. of New South Wales, Australia, which rises in the Liverpool range. Its basin is an immense coal-field, and it flows into the Pacific at Port Hunter after a winding course of 300 m.

Hunter's Moon, full moon next after the harvest moon (q.v.), following the Autumn Equinox.

Hunting, see BIG GAME; FOX-HUNTING; DEER; SHOOTING.

Huntingdon, Henry of, see HENRY OF HUNTINGDON.

Huntingdon, Selina Hastings, Countess of (1707-91), daughter of Washington Shirley, 2nd earl Ferrers, and married, in 1748, Theophilus, 9th earl of H., of Donington Park, Leics. She was converted to Methodism by her sister-in-law, Lady Margaret Hastings, and henceforth devoted most of her time and energy to religion and religious work. She became intimate with George Whitefield, and later with the Wesleys, and was a member of the first Methodist society founded in Fetter Lane, London, in 1739. She erected a chapel in Brighton in 1761, and afterwards at such other fashionable resorts as Bath and Tunbridge Wells, in the hopes of attracting to her 'connexion' members of the upper classes (see COUNTESS OF HUNTINGDON'S CONNEXION). In 1767 she rented Trevecca House, in North Wales, as a training institute for members of her religious conviction, and subsequently extended her operations to America, though she never visited that continent. See lives by J. B. Figgis, 1891, and Sarah Tytler, 1907.

Huntingdon, market town and municipal bor., and co. tn. of Hunts, England, situated on the l. b. of the R. Ouse, 60 m. N. of London. Here Ermine Street crosses the riv. In the 10th cent. the Danes constructed a defensive earthwork, or 'burh,' here, remains of which may be seen on Mill Common. Edward the Elder captured the tn in 921, but it was destroyed by the Danes in 1010. It is now the agric. centre of the dist., but the ancient market has decreased greatly in importance. The bor. possesses a fine but incomplete series of royal charters from 1204. The 17th cent. mace has a curious hist.: the silver head was pledged by the almost bankrupt corporation to Leicester in the 18th cent., and a cheap imitation was substituted, which still remains. Only 2 of the 16 medieval churches have survived: All Saints', dating from the 13th to 16th cents., and St Mary's, 12th to 17th cents. Hinchingsbrooke, NW. of the tn, the seat of the earl of Sandwich, built on the site of a nunnery reputed to have been founded by William the Conqueror, dates from the 16th cent., but incorporates remains of the earlier work. The gatehouse is particularly fine. Here is a Cromwell museum. Cromwell House, bp. of Oliver Cromwell, stands in the High Street on the site of an Augustinian priory, but is mostly modern. There are no

visible remains of the 12th-cent. Augustinian priory. The old grammar school was formerly the hospital of St John the Baptist, a 12th-cent. foundation. Here Cromwell went to school. The much-restored building is of Norman date. The modern grammar school was built in 1938. The site of the castle is now a public open space. The earthworks, constructed in 1668, consists of a motte, with a bailey partly surrounded by a rampart and a deep ditch. Close by the site is the beautiful medieval bridge of 6 arches, built in 1332; in the centre of the parapet are slots marking the boundary separating H. from the bor. of Godmanchester. The 18th-cent. gaol is now converted into houses; it has some fine brick dungeons. There are many houses of the 17th and 18th cents., chief of which are Walden House and Ferrar House, both 17th cent.; and Whitwell House, Cowper House, Monks House, and Castle Hill House, all 18th cent. The George Hotel has a 17th-cent. galleried courtyard. The tn hall was built in 1745 by private subscription, and contains some interesting paintings of royalty and local celebrities. A feature of the tn is the extensive commons which almost encircle it; they are the property of the Freemen. There are walks along the banks of the Ouse as far as the vil. of Hartford, recently included in the bor. The leading industries are vegetable canning, and the manuf. of rubber fittings for motor cars, etc.; lesser industries are confectionery, mineral water making, pottery, and radio parts. Brewing is carried on by the successors of the Checker Inn and Malting, H.Q. of Charles I in 1645 after he had expelled the Parliamentarians from the tn. Pop. 5282.

Huntingdonians, see COUNTESS OF HUNTINGDON'S CONNEXION.

Huntingdonshire, inland co. of England, bounded on the E. by Cambs, SW. by Beds, and W. and N. by Northants. The surface of the co., which is all below 300 ft, is gently undulated except in the flat Fen dist. to the E. and NE. Geologically the co. lies in the Oolite belt, but is masked by boulder clay and the peat Fens. The prin. minerals are high-quality brick-earth and gravels. The prin. rivs. are the Great Ouse and the Nene. Agriculture is the chief industry, but brickworks in the Fletton dist. to the N. are among the largest in the country. Electrical and other engineering is expanding; lesser industries are paper-making, sugar-beet and chicory processing, brewing, and canning. Huntingdon is the co. tn; other tns include St Ives and St Neots. Area of administrative co. 233,985 ac.; pop. 69,302. See W. M. Noble, *Huntingdonshire*, 1920; A. Mee, *Huntingdonshire and Bedfordshire*, 1929.

Huntington, Ellsworth (1876-1947). Amer. geographer; prof. of Yale Univ. from 1910. He accompanied sev. expeditions to Asia, and undertook research into the drying out of the continent. Works include *Palestine and its Transformation*, 1911, *The Climatic Factor*

1914, *Civilisation and Climate*, 1915, *Red Man's Continent*, 1919, *Earth-Sun*, 1923, *The Character of Races*, 1924, *Quaternary Climates*, 1925, *The Human Habitat*, 1928, *Weather and Health*, 1930.

Huntington: 1. City, cap. of H. co., Indiana, U.S.A., 25 m. SW. of Fort Wayne in agric. area. It has limestone quarries and manufs. rubber goods, furniture, and cranes. It is the seat of H. College. Pop. 15,100.

2. City, cap. of Cabell co., W. Virginia, U.S.A., on the Ohio R., 50 m. W. of Charleston. It is a commercial and manufacturing centre, and a riv. port. Industries include rolling stock manuf. and repairing, steel, glass, and chemicals. Coal, oil, and natural gas are found near by. Marshall College is situated in H. Pop. 86,350.

Huntingtower and Ruthvenfield, united vls. of Perthshire, Scotland, 5 m. from Perth and bordering on it. Ruthven Castle, which belonged to the earls of Gowrie, was the scene of the 'Raid of Ruthven' in 1582, when James VI, then a boy, was kidnapped; the name was later changed to Huntingtower Castle. There are bleachfields, estab. in 1774 and fed with water from the R. Almond. Pop. 350.

Hundy, mrkt tn of Aberdeenshire, Scotland, situated at the junction of the Bogie and Deyeron, 9 m. SE. of Keith, and 40 m. NW. of Aberdeen. The ruins of Huntly, or Strathbogie castle are in the vicinity. H. is a prosperous tn, lying in a rich agric. dist., with a trade in farm produce, and manufs. farm implements. Pop. 4200.

Huntsman Process, see IRON AND STEEL.

Huntville, cap. of Madison co., Alabama, U.S.A. Indian corn, cotton, and fruit are cultivated. Pop. 16,400.

Hunyadi Janos, or John Corvinus Hunyadi (c. 1387-1456), Hungarian soldier, b. at Hunyad in Transylvania. At an early age he entered the service of King Sigismund and distinguished himself in the Hussite wars. After the death of Albert in 1439 he co-operated in the election of Ladislaus III, who made him voivode of Transylvania and captain of the fortress of Belgrade. In subsequent struggles with the Turks he won victories at Szendo (1441), at Szentimne, and the Iron Gates of the Danube (1442), but was defeated in 1444 at Varna, where the king met his death. H. was made governor of the country during the minority of Ladislaus V, but had continually to contend against the jealousy of Gara and the Czillei. In 1453 the king was declared of age, and H. organised a Turkish crusade, during which he won his last victory at Mendor Fehara in 1456, dying of plague in the camp 3 weeks after the battle.

Hunza (also Kanjut) and Nagar, 2 small states on the NW. frontier of Kashmir, now included in Pakistan. The 2 states, though peopled by the same Dard race, were always at war, but when the Gilgit agency was estab. they turned their attention to the Brit. agent. This led to the Hunza-Nagar expedition (1891) under

Col. A. Durand, the storming of Fort Nilt, and the subsequent occupation of the 2 states by Brit. troops.

Huolu, tn of China, in the prov. of Hopen, in 38° N. and 114° 36' E. It is at the foot of the pass which leads from Hopen to Shansi, with which a trade in coal, iron, and pottery is carried on.

Huon Gulf, extensive inlet, in E. New Guinea, situated between lat. 6° 45' and 7° 30' S. Lea and Salamama are the main harbours.

Huopville, tn in Tasmania, 23 m. from Hobart. It is the centre of the fruit-growing industry, and also the centre of commercial activity, schooling, etc., for the dist. Pop. 1100.

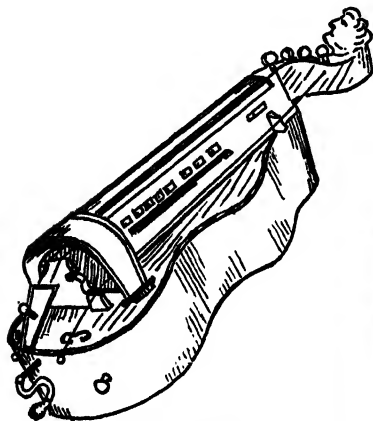
Hupa, see HOOPA.

Hupeh, prov. of central China, bounded on the N. by Honan, S. by Hunan, E. by Anhwei, and W. by Shensi and Szechwan. The main portion of the prov. is a plain through which flow the Yangtse and the Han R.s. There are also numerous smaller rivs. and many lakes in H.; consequently the fish industry is of considerable importance in the prov.'s economy. Agriculture is prosperous, rice, cotton, wheat, rape-seed, tobacco, and beans being grown; vegetable tallow also forms one of the prin. exports. A small quantity of gold is found in the Han R., and coal is extensively worked. Other minerals found are iron, salt, lime, saltpetre, and sulphur. Its cap., Wu-Han, comprises the former cap. Wuchang, the port of Hankow, and the city of Hanyang, forming a triple city of huge size connected by the Yangtse Bridge and the Han Bridge. Other important tns are Shashih, Ichang, Huangshih, and Enshi. Area 70,313 sq. m.; pop. (1954) 27,789,693.

Hurd, Richard (1720-1808), cleric and writer, b. Congreve, Staffordshire. He was ordained in 1742, and in 1750 was appointed preacher at Whitehall through the influence of his friend Wm Warburton. In 1765 he was made preacher at Lincoln's Inn, and 2 years later archdeacon of Gloucester. In 1774 he was appointed to the see of Lichfield and Coventry and became tutor to the Prince of Wales and duke of York, being made bishop of Worcester in 1781. His residence, Hartlebury Castle, contained a magnificent library. His works include *Moral and Political Dialogues*, 1759, *Letters on Chivalry and Romance*, 1762, *Uses of Foreign Travel*, 1763, *Collected Works*, 8 vols., 1811. See F. Kilvert, *Memoirs of the Life and Writings of Bishop Hurd*, 1860.

Hurdy-gurdy, musical instrument akin to the 'organistrum,' of which, indeed, it was a later development. In appearance it was something between a lute and a guitar. There were 4 or 6 strings in all, but only the treble ones, called the 'chanterelles,' were reached by the movable frets or keys, by means of which it was possible to play a diatonic melody. The other strings were tuned as drones and were made to vibrate by the friction of a leather-covered and well-rosinced wooden

wheel turned by a handle with the right hand. This quaint instrument was invented by the O.F. school (13th cent.), when it was developing polyphony over a pedal bass. It was known in France as the *vielle-à-roue*. Tuned to the chords of C or G major, the H. G. could support the singing voice or make music by itself. In course of time it acquired a reputation for rusticity. Other countries called it the Ger. lyre, though the Germans did not rate it highly and its only place in society was at the Fr. court, where it still fl. in the 18th cent. Methods existed for its



HURDY-GURDY

study and sonatas for one or two H. G.s were composed by Lully and other composers, while the popularity of mock rusticity at the court of Versailles in the time of Marie Antoinette gave rise to the *fête champêtre* orchestra, which included the H. G., bagpipes, flutes, recorders, and oboes. Lavishly ornamented and jewelled instruments were made, some of which are to be seen to-day in museums. The *vielle-à-roue* continued to appear intermittently during the 19th cent.; thus it was employed in Donizetti's opera *Linda di Chamounix*, 1842, to give local colour to 2 arias. In 1949 Mr John Christie, C.H., founder of Glyndebourne Opera, played on the H. G. a divertimento by Haydn, adapted from one of sev. concertos which the composer wrote for the king of Naples in 1786. This monarch performed on the *lyra organizzata*, which resembled the H. G. in shape but had pipes like an organ and a device that allowed the wheel to act as both bow and bellows.

Hurlford, tn of Ayrshire, Scotland, situated on the Irvine, 2 m. S. of Kilmarnock. The manuf. of fireclay sanitary ware is carried on, also iron-founding. Pop. 4600.

Hurling. Irish MSS. held in univs. and museum libraries have considerable refer-

ence to the anct game of H. These MSS. trace H. back to the 10th cent. The game was known in Gaelic as 'Ioman,' meaning to urge or drive forward. Inter-clan and inter-par. matches were played down through the centuries but the game was estab. in its present form when the Gaelic Athletic Association was founded in 1884. The hurl, usually made of ash, is 3 in. wide at the 'boss' or striking portion, otherwise it resembles a hockey stick. The hurl is known as 'camán' in Gaelic, the ball is called the 'sliotar.' The camán is suited to both ground and overhead play and every first-class hurler is ambidextrous and can strike the ball from either left or right. Both sides of the camán are flat with rounded handle nicely balanced. The ball is made from a slit-cork centre wound up to the necessary size with woollen thread and covered with leather—usually white or brown. It has more resilience than a hockey ball. The hurl reaches to the hip of the player. The ball is 3½ to 4½ oz in weight and may be from 9 to 10 in. in circumference. The playing pitch must be from 140 to 160 yds long and 84 to 100



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wide. Most first-class grounds are of maximum area and carry lines at 14, 21, and 70 yds. Scoring area, posts 21 ft apart, 16 ft high with a crossbar 8 ft from ground—under bar a goal (3 points) over 1 point. Teams 15 a side. The ball must not be thrown, may be caught in the air, lifted off the ground with the hurl, or hit directly on the ground. Duration of play, 30 min. in each half. H. is an extremely fast game—speed, skill, courage, and stamina are all essential. There are 32 co. grounds and many club grounds; 900 clubs are affiliated. Prin.

competitions: senior, junior, minor All-Ireland Championships; National Leagues; Railway Cup; Oireachtas Cup; and many others.

Hurlingham Park, fashionable resort at Fulham, London. The organisation of polo in England dates from its adoption by the Hurlingham Club in 1873, and the game is still played there. In 1867 the Hurlingham Pigeon-shooting Club was formed, and the sport was carried on until its suppression in 1906.

Huron, city of S. Dakota, U.S.A., co. seat of Beadle co. It stands on the r. b. of the James R., 110 m. E. of Pierre. It is a trade and shipping centre for a large agric. area; meat products, beverages, feed, lumber, dairy products, poultry, and grain are produced. H. College and airport are situated here. Pop. 12,788.

Huron, Lake, in point of size (23,200 sq. m.) the second of the 5 Great Lakes between Canada and the U.S.A. in North America. It is bounded by Ontario except on the W. and SW., where it adjoins Michigan. Grand Manitoulin Is., one of 3000, and the peninsula of Cabot's Head divide the lake into 2 unequal sections, the N. consisting of North Channel and Georgian Bay. At the N. St Mary's R. carries down water from Lake Superior which is 20 ft. higher, whilst at the S. the St Clair R. discharges into Lake Erie which is 9 ft. lower; on the NW. the Strait of Mackinac makes a connection with Lake Michigan. L. H. is 320 m. long, 581 ft. above the sea, and reaches a depth of 802 ft. It is subject to violent storms, and is rich in salmon, trout, etc. The lake was discovered in 1615 by Champlain and Father Le Caron who reached it from the Ottawa R. Champlain named it *La Mer Douce*, i.e. fresh-water sea; it was subsequently called *Lac d'Orléans*, but eventually, on account of the estab. of the Huron missions, received the name *Lac des Hurons* or Huron Lake. For long the N. channel of the lake continued to be a highway for the fur trade (see HUDSON'S BAY COMPANY). For many years the lake has been a centre of lumbering operations. See E. P. Morton, *Lake Huron and the Country of the Algonquins*, 1913; P. C. Day, *Transportation on the Great Lakes* (U.S. War Dept.), 1936; H. Hatcher, *The Great Lakes*, 1944.

Huronian, name of a class of rocks which belong to the pre-Cambrian group. They consist of more or less metamorphosed sedimentary rocks, and, in Canada especially, valuable deposits of important metals are found therein. Generally speaking, the H. rocks comprise quartzite, slate, and limestone. They are well developed in certain regions of Michigan, Wisconsin, and Minnesota—the last-named having valuable iron ores.

Hurons, Amer. Indian tribe, properly known as Wyandots (q.v.).

Hurrians, possibly the Biblical Horites, an ethnic group inhabiting Syria, Upper Mesopotamia, and E. of Tigris in the 18th–14th cents. BC. Their culture and customs are known from thousands of cuneiform tablets found at Nuzi, Boghaz-

koi, Ras Shamra, and Alalakh. The H. language, still only partially understood, is agglutinative and akin to Luwian and Hittite. See MITANNI; also I. J. Gelb, *Hurrians and Subarians*, 1944.

Hurricane, wind-storm. The word was borrowed in the 15th cent. by the Portuguese navigators from the Caribbeans, who described such a phenomenon by the word 'huracan.' H. has the technical meaning of wind speed more than 72 m.p.h. (Beaufort force 12), but is popularly used of any violent tempest, though, of course, it primarily referred to the sudden storms to which the West Indies are subject. Thus tornadoes, cyclones, and typhoons are all species of H. The tropical H.s are whirling storms, the diameter of their circular motion being often as great as 300 m. They usually travel in a westerly direction from the equatorial belt of calms where they form, then mostly curve away from the equator and eventually move in an easterly direction to temperate lats. At first, H.s usually travel at about 15 m.p.h., but when beginning to move to the E. they often attract colder air and change into the larger frontal depressions, common to temperate and polar lats., which move much faster. The winds blow spirally inward with a tremendous velocity, often reaching 72 m.p.h. and even over 100 m.p.h. As in all low-pressure systems, the direction of these inward-blowing air currents is counter-clockwise in the N. and in the opposite direction in the S. hemisphere. The centre of the swirl is also the centre of lowest pressure and is called the 'eye of the storm'; as the eye is reached the winds drop suddenly, the torrential rain stops, the clouds often break leaving blue sky or only high clouds, and the sea waves become confused and 'pyramidal.'

H.s form mostly on the sea, where they are a great source of danger to ships. If they pass over an inhabited ls. they scatter wanton destruction in their path, and even if they do not strike an ls., they often cause great damage by heaving up huge waves against the continental shores. 'Typhoon' is the specific name for similar wind-storms in Oriental seas. See CYCLONE; METEOROLOGY; TORNADO; and TYPHOON. See J. R. Tannehill, *Hurricanes: their Nature and History*, 7th ed. 1950.

Hurst, Fannie (1889–), Amer. novelist, b. Hamilton, Ohio. Brought up in St. Louis, Missouri, she was educ. at Washington Univ. Training for fiction by gaining experience of life as shop-girl and waitress, she became a fluent and versatile writer. Her first books were vols. of short stories, *Just Around the Corner*, 1914, *Gaslight Sonatas*, 1918, and *Humoresque*, 1919. In 1915 she married Jacques S. Danielson, a pianist. Of her novels, her own favourite was *Lummoor*, 1923, a story of a servant-girl; others are *Star Dust*, 1921, *Five and Ten*, 1929, *Back Street*, 1930, *Imitations of Life*, 1933, *Lonely Parade*, 1942, *Hallelujah*, 1944, *The Hands of Veronica*, 1947, and *Anywoman*, 1950. She has been called 'the sob-sister of American fiction.'

Hurst Castle, par. and castle of Hants, England, situated about 4 m. SW. of Lymington. The castle was erected by Henry VIII for the purpose of defending the Solent. Charles I was imprisoned here (1648). It is a fortress and look-out station. At the rear of the point of fortifications are 2 lighthouses with occulting and fixed lights.

Hurstmonceux, see HERSTMONCEUX.

Hurstpierpoint, par. of Sussex, England, 8 m. N. of Brighton, and 2 m. from Hassocks (its station on the S. Region

Granada, 1568-71, a hist. of the revolt of the Moors of Alpujanas under Philip II, not pub. until 1627. His talents as a poet were of no mean order, and he popularised the classical It. hendecasyllables. He is generally allowed to be the author of that great picaresque novel, *Lazarillo de Tormes*. See A. G. Palencia and E. Mele, *Vida y obras de don Diego Hurtado de Mendoza*, 3 vols., 1940-3.

Húsavík, tn on the N. coast of Iceland, an important trading and fishing centre with sev. schools. Pop. 1350.



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DEVASTATION IN THE WEST INDIES, CAUSED BY A HURRICANE

railway). Holy Trinity Church is a fine modern building. Here is St John's College, a public school for boys. Pop. 4000.

Hurstville, metropolitan municipality of Sydney, in Cumberland co., New South Wales, Australia. It is situated in the S. section of the metropolis. Pop. 53,040.

Hurtado de Mendoza, Diego (1503-75), Sp. diplomatist, poet, and historian, b. Granada, and educ. at the univ. of Salamanca. He was sent as ambas. to England in 1538, to Venice in the following year, acted for some time as military governor of Siena, and represented the diplomatic interest of Spain at the Council of Trent. From 1547 to 1554 he was special plenipotentiary at Rome. Being obliged in 1568 to leave the Court on account of a quarrel with Philip II, he settled at Granada and devoted himself to the study of Arabic poetry and to the production of his best work, the *Guerra de*

Husband and Wife. This article considers only the rights and obligations arising from the relationship of H. and W. For the legal aspects of contracting and dissolving marriages, see **MARRIAGE**; **ALIMONY**; **DIVORCE**; and **JUDICIAL SEPARATION**. The older theory of Rom. law contemplated the wife as a mere chattel of the husband, and gave her no rights superior to those of her own daughters. The later Rom. law, however, improved the wife's legal status. Many modern legal systems have conferred on wives rights of separate property ownership and personal freedom.

Rights for loss of consortium.—Theoretically each spouse has a legal right to the society of the other (*consortium*) but in practice Eng. law cannot enforce this. A husband has no legal right to restrain his wife from leaving him. Indeed, if the circumstances justify it, he may be

ordered by the court not to molest her if she chooses to stay away. A decree for restitution of conjugal rights (q.v.) will not be enforced to compel the return of a deserting spouse, but non-compliance will eventually constitute desertion as a ground for divorce. A husband whose wife leaves him at the instigation of a third party may claim damages for enticement, the amount awarded being by a valuation of her services as his housekeeper and, if applicable, as his employee. A wife has no corresponding right of action. Actions for enticement are rare. In practice, however, a husband may claim damages from the enticer as co-respondent in divorce proceedings. The court will assess the damages on the basis of the actual value of the wife (e.g. if she were an idle slut, the amount would be very nominal). Each spouse may sue for damages for the loss of 'the comfort and society' of the other who has been physically injured by some unlawful act of a third party. The claim for damages where death results is confined to the actual pecuniary loss sustained.

Specific rights and obligations of the husband.—A husband must maintain his wife. Any allowance which he makes her for housekeeping purposes is his property. If a thrifty wife is able to save part of this allowance, her husband can claim it as his property whether it is in cash or has been converted to another form. A wife may pledge her husband's credit (for necessities only, e.g. food and clothing) for herself and the children, even if she has separate property of her own. A husband may escape liability by notifying tradesmen that he will not pay any debts contracted by his wife. This is only effective if he can prove that he already makes his wife an adequate allowance or that the tradesmen are aware that she has no authority to pledge his credit. A newspaper announcement of a husband's disclaimer of his wife's debts will only be effective if it can be proved that creditors have actually seen it. A husband is not liable on any contracts made without his authority by his wife, who can be made bankrupt by unpaid creditors. He is not liable for any unlawful act committed by his wife unless acting as his agent or servant. A husband is liable for his wife's income tax. His rights include: (1) the guardianship (jointly with his wife) of their children; (2) the determination, during his lifetime, of the education and religious upbringing of his children; (3) within reason, the choice of the matrimonial home; (4) in the absence of fraud, an insurance policy effected by him, and expressed to be for the benefit of his wife and children or both, can never be touched by his creditors.

Rights of action against each other.—Neither spouse can sue the other for actionable wrongs (e.g. negligence, defamation), except for the protection of his or her separate estate (e.g. in respect of a business carried on by him or her). With certain exceptions they may not prosecute each other criminally in respect

of acts committed whilst they are living together. They may prosecute each other for offences against the person (e.g. assault, wounding) or for the protection of separately owned property. A wife may not prosecute her husband for larceny unless they are living apart. (For rights of maintenance and alimony, see *DIVORCE*; *ALIMONY*; *MAINTENANCE*; and *JUSTICES OF THE PEACE*.) Any disputes between separated spouses about the ownership of property may be determined by the courts on a summons under the Married Women's Property Act, 1882.

Property rights.—Since the Married Women's Property Act, 1882, a married woman enjoys the same rights over her own property as do spinsters and widows. For widows' and widowers' rights of succession to the property of deceased spouses see *SUCCESSION*, *INTESTATE*; *WILLS*.

Miscellaneous matters.—For criminal liability of married women, see *CRIMINAL LAW*. Neither spouse can be compelled to give evidence against the other in criminal proceedings, but by the Criminal Evidence Act, 1898, may testify on behalf of the other if requested to do so by the accused spouse. In civil proceedings, however, both H. and W. can, generally speaking, be compelled to give evidence against each other (see *EVIDENCE*).

The Scots law of H. and W. is not now markedly dissimilar from the Eng., since the passing of the Married Women's Property (Scotland) Act, 1881. The wife has a separate estate in her own movables, and the rents and profits of her heritable property belong to her. Parties married before the Act can come under its operation by mutual deed, and in any case come under the Act unless the husband before marriage has by irrevocable deed made reasonable provision for his wife in the event of her surviving him. A further Act of 1920 provided that a married woman should with regard to her estate have the same powers of disposal as if she were unmarried. The husband's right of administration was abolished and his consent to his wife's disposal of her heritable estate became no longer necessary. Further, the husband's rights of succession to his wife's movable estate are co-extensive with her rights in his and similarly cannot be defeated. See also *SCOTS LAW*. See W. P. Eversley, *Law of Domestic Relations*, 6th ed., 1951.

Husi, Hushl, or Hushon, in of Moldavia, Rumania, situated 9 m. W. of the Moldavian S.S.R. border and 40 m. SSE. of Jassy. Wine is largely produced, and there is a noted yearly fair. The Treaty of Pruth between Turkey and Russia was signed here in 1711. Pop. (1948) 16,605.

Husk (Lungworm; Hoose), a severe form of broncho-pneumonia in cattle, sheep, and pigs, caused by worms which live and breed in the lungs and air passages of the animals. It is estimated that this disease costs Brit. farmers more than £3 million a year. More than 600,000 cattle may be seriously affected in Britain alone during a wet summer.

Many of these die and survivors are a liability. Nearly 50 per cent of young pigs and many sheep suffer also. The condition of lung infestation is common in many countries in Europe and in North America. In 1957 I.C.S. marketed the chemical Cyanacethydrazide as a cure for this previously incurable disease. The drug, which had been known for some years though its curative power in parasitic pneumonia had not been discovered, belongs to a group that has shown promise in the treatment of tuberculosis. It is made from hydrazine, until recently scarce and expensive, but now produced on a big scale as a rocket propellant. Cyanacethydrazide is said to act not by killing the worms but by forcing them to move up the windpipe of the affected animal, when they are swallowed and destroyed. *See also* CATTLE; PIG; SHEEP.

Huskinson, William (1770-1830), Brit. statesman, b. at Birch Moreton, Worcestershire, and educ. partly in Paris. After a preliminary grounding in affairs as private secretary to Lord Gower, the Brit. ambas. at Paris, and then as secretary to the Admiralty, he took his seat as a Tory in Parliament in 1796, but his views were always more liberal than those of the vast majority of his party. From 1804 he held various minor offices, and in 1823 he became president of the Board of Trade, and introduced a number of measures tending towards freer trade. H. became colonial secretary and leader of the House of Commons under Goderich, 1827, and retained these positions under Wellington, with whom, however, he later disagreed, and from whose ministry he retired. He was run over by an engine at the opening of the Manchester and Liverpool Railway on 15 Sept. 1830, and d. the same day. *See* life by J. Wright, 1831.

Huss, or Hus, John (c. 1373-1415), Bohemian religious reformer, b. Husinec, Bohemia. The name he adopted about 1396 in place of Johann Hussinec, or de Hussynecz. He was educated at a local school and at the univ. of Prague, where he became B.A., 1393, Bachelor of Theology, 1394, and M.A., 1396. In 1400 he was ordained, and in 1402 made rector of the univ. of Prague. The pro-Wycliffe sentiments of H. gradually made him suspect of heresy, and his protest against the burning of Wycliffe's books by the archbishop of Prague in 1410 caused his excommunication. His support of the king's policy towards the papal schism made him very popular, and although in 1411 the whole city of Prague was laid under an interdict, H. still preached and functioned as usual. In 1412, however, he was obliged to quit Prague, and in seclusion he wrote *De Ecclesia*, his greatest work. In 1414 he was summoned to the Council of Constance under a safe conduct. Nevertheless, he was imprisoned soon after his arrival, and, before the council in 1415, was ordered to recant all his doctrines as heretical. On his refusal he was condemned to the stake, and d. with ex-

emplary fortitude on 6 July. H. was an erudite scholar, as is proved by his *Super IV Sententiarum*, but he is chiefly remarkable for the inspiration he gave to Bohemian nationalism. His works may be divided into 4 classes: (1) dogmatical and polemical; (2) homiletical; (3) exegetical; (4) epistolary. His followers, the Hussites, were also known as Calixtines or Utraquists from their insistence on the restoration of the chalice or communion in both kinds, though H. himself never demanded this. *See also* HUSSITES, WARS OF THE. *See* also Flajšhans (ed.), *Joannes Hus Opera Omnia*, 1904. *See* also W. Berger, *Joannes Hus und König Sigismund*, 1871; Count F. Lützow, *Life and Times of Master John Huss*, 1899;



JOHN HUSS

J. Herben, *Huss and his Followers*, 1926; E. Denis, *Huss et la guerre des Hussites*, 1930; P. Roubiczek and J. Kalmer, *Warrior of God: Life and Death of John Huss*, 1947.

Hussars, originally the name of the Hungarian cavalry raised by Matthias I in 1458. The word is derived from the Hungarian *husz*, meaning twenty, as every twentieth house had to furnish a man for the corps. The term was applied to light cavalry whose duties were mainly scouting, reconnaissance, and roving commissions. Speed being an essential feature in their employment, they had to travel 'light,' a factor which also governed the distance they could cover in a given time. The success of this arm in the Hungarian service caused it to be adopted in most European armies, and in the Brit. service some Light Dragoon regiments were converted into H. at the beginning of the 19th cent. The distinctive features of the dress of H. are the bushy, ribbed short-jacket, and pelisse (or hanging-jacket), worn over the left shoulder. In the process of time the tactical employment of the various kinds of cavalry has become unified and no distinction is now made. Up to 1922 the H. regiments in the Brit. service were the

3rd, 4th, 7th, 10th, 11th, 13th, 14th, 15th, 18th, 19th, and 20th, but in that year, on the reduction of the cavalry estab., the following pairs of regiments were amalgamated to form one regiment each—13th-18th, 14th-20th, and 15th-19th. In 1928 the 11th was converted into a cavalry armoured car regiment. Five years later, the 15th/19th were redesignated the '15th King's Royal Hussars.' Under the subsequent army reorganisation most of the remaining Hussar regiments were converted into light tank units or armoured car companies. The roll of battle honours of the H. regiments (or their predecessors, the Light Dragoons) commences with Dettingen (1743), and they have taken a conspicuous part in all campaigns since that date. During the Peninsular campaign the 15th gained particular distinction in actions at Sahagan and Benevente (21 Dec. 1808), when they routed a far superior body of Fr. cavalry. 'Waterloo' is also on their roll; also the victories in the Crimea. The 4th formed part of the Light Brigade at Balaklava. The type of fighting in the South African War, 1899-1902, was peculiarly suited to cavalry actions, and the H. had their full share of them. During the early stages of the First World War they were employed as cavalry, but with the development of trench warfare they fought in France and Flanders in a dismounted capacity. The 7th and 13th were sent to Mesopotamia, where they did effective work as cavalry.

In the Second World War 2 additional regiments were formed, the 23rd H. (raised in 1940, disbanded in 1948) and the 26th H. (raised 1941 and disbanded 1948). The H. which fought in NW. Europe from Normandy to the Elbe included 8th King's Royal Irish H., 11th H., 13th/18th Royal H., 15th/19th The King's Royal H., and the 23rd H. With the Eighth Army in Italy were the 3rd The King's Own H., 4th Queen's Own H., and the 10th Royal H.

Hussein (Husein) ibn 'Ali (1853 or 1854-1931), sometime king of the Hejaz, b. at Mecca; son of the Amir 'Ali ibn Muhamed; succeeded his uncle the Amir Abdullah as Grand Sherif of Mecca, 1909. He was an opponent of Turkish influence, and sided with the Brit. in the First World War after having espoused the opposite cause for a short period; proclaimed himself king, 1916, and aspired to the position of king of pan-Arabia, thereby incurring the hostility of Ibn Sa'ud. He sent a representative to the Peace Conference, 1919. But, as he refused to be bound by the treaties there made, he got into difficulties with neighbouring states. In 1924, on the deposition of the Ottoman Caliph by the Turkish Grand National Assembly, H. was offered and accepted the vacant Caliphate, but was unable to retain it in the face of internal faction. In the same year he abdicated in favour of his son Ali, after being defeated by Ibn Sa'ud (q.v.), and retired to Akaba, whence he was removed to Cyprus. There he spent 5 years of exile, only retiring in 1930 to Amman, the cap. of his son

Abdullah, emir of Transjordan where he d. See also ARABIA; HEJAZ. See M. Bouveri, *Vom Minarett zum Bohrturm*, 1938.

Hussites, War of the, name given to the struggle between the Bohemian followers of John Huss (q.v.) and Sigismund, king of Bohemia, which began in 1419. Popular feeling was stirred up by the news of the martyrdom of Huss, and in 1415 the nobles of Bohemia and Moravia sent the *protestatio Bohemorum*, couched in very strong terms, to the council at Constance; the contemptuous attitude of Sigismund, who declared that he would 'drown all Wycliffites and Hussites,' finally brought on the war, which, though religious in immediate origin, had many political associations. The Hussites were victorious at Žižkov (as it afterwards came to be called from Žižka (q.v.), the leader and soul of the war) in 1420, Deutsch Brod in 1422, Aussig in 1426, and Taus in 1431, and invaded Silesia, Saxony, and Franconia many times with success. After Taus negotiations were begun, and by the Compacts of Prague (1433) the moderate party of the Hussites gained their ends. There were, however, two opposing parties in the Hussite movement, the Utraquists and the Taborites. The former, who were also known as Calixtines (Lat. *calix*, chalice), derived their name from the fact that their main religious demand was for the communion in both kinds (*sub utraque specie*). The Taborites (from Tabor, their H.Q.) were far more revolutionary in their views and came to reject many of the basic principles of Catholicism, as well as becoming extremely radical in their political ideals. The latter party refused to accept the Compacts of Prague, but were totally defeated by the Utraquists at Lipany in 1434. The Utraquist creed was that of the estab. Church of Bohemia, until all deviations from traditional Catholicism were prohibited in 1620. For a later development of the Taborites, see MORAVIANS. See J. Herben, *Huss and his Followers*, 1926; E. Denis, *Huss et la guerre des Hussites*, 1930.

Huston, John (1906-), Amer. film director, son of the famous actor Walter Huston, b. Nevada, Missouri. His films include *The Maltese Falcon*, *In This Our Life*, *Treasure of Sierra Madre* (1948 Academy Award winner), *Key Largo*, *The Asphalt Jungle*, *The Red Badge of Courage*, *The African Queen*, *Moulin Rouge*, and *Moby Dick*.

Husum, Gor. tn in the Land of Schleswig-Holstein (q.v.), near the North Sea coast, 44 m. W. by N. of Kiel (q.v.). It is an important mkt. tn. Pop. 25,000.

Hutcheson, Francis (1694-1747), Irish philosopher, b. Drumalig, co. Down, and educ. at Glasgow, where he studied philosophy, classics, literature, and theology. On leaving Glasgow he was ordained and was on the point of accepting a Presbyterian ministry when he was persuaded to start a private academy in Dublin. While employed there he pub. an *Inquiry into the Original of our Ideas of Beauty and Virtue*, 1725, followed by an *Essay on the Passions and Affections*,

1728. These writings probably led to his election to the chair of moral philosophy at Glasgow in 1732, where he spent the remainder of his life lecturing on a variety of subjects. His prin. work is *A System of Moral Philosophy*, 1755. He adopted Lord Shaftesbury's view in this direction, and exercised a great influence upon the Scottish philosophy of the modern school. See T. Fowler, *Shaftesbury and Hutcheson*, 1882; W. R. Scott, *Francis Hutcheson*, 1900.

Hutchinson, Anne (1591-1643), Amer. religious enthusiast, daughter of a Lincs clergyman named Marbury. She married in 1612 and emigrated in 1634 to Boston, Massachusetts, where she lectured, and was a follower and admirer of the Rev. John Cotton. She denounced the Massachusetts clergy, and was tried for heresy and sedition, and banished. She then estab. a settlement in Rhode Is., and set up a democracy (1638). Four years later, after the death of her husband, she settled on the shore of Long Is. Sound in what is now the New York mainland, and was killed in an Indian rising. A. H. and her followers were known as Antinomians, a name first used by Luther for the followers of John Agricola (see ANTINOMIANISM). See C. F. Adams, *Antinomianism in the Colony of Massachusetts Bay*, 1894.

Hutchinson, Arthur Stuart Menteth (1879-), Brit. novelist, b. India, son of a general. After studying medicine for 3 years at St Thomas's, London, he changed over to journalism and rose to be editor of the *Daily Graphic*. During this period he wrote 3 novels, *Once Aboard the Lugger*, 1908, *The Happy Warrior*, 1912, and *The Clean Heart*, 1914. In the First World War he served with the Royal Engineers. After it he scored a remarkable success with his novel *If Winter Comes*, 1920, and followed it with *This Freedom*, 1922, *One Increasing Purpose*, 1925, *Big Business*, 1932, *As Once We Were*, 1938, *He Looked for a City*, 1940, and *It Happened Like This*, 1942. *A Year that the Locust . . .*, 1935, is an autobiography.

Hutchinson, Sir George Thompson (1857-1931), founder of the large publishing group bearing his name. Apprenticed at the age of 16 to Alexander Strahan, a London publisher, he later joined the newly-formed firm of Hodder and Stoughton as a traveller, on whose behalf he made 3 journeys round the world. He started on his own as a publisher in 1889, his first book being *Let's Popular Atlas of the World*. He was subsequently knighted.

Hutchinson, John (1615-64), Eng. Puritan soldier, b. Nottingham. Educ. at Nottingham and Lincoln free schools and later at Peterhouse, Cambridge. He entered Lincoln's Inn in 1637 to study law, but devoted himself rather to music and divinity. In 1643 he entered the Parliamentarian army with the rank of lieutenant-colonel, and was appointed governor of Nottingham castle and tn. In 1646 he was returned to Parliament as member for Notts. He was one of the

signatories of Charles I's death-warrant. He was elected member for the first 2 councils of state of the Commonwealth, but with the expulsion of the Long Parliament in 1653 retired into private life. After the Restoration he was confined in the Tower and Sandown Castle from 1662 till 1664, dying at the latter place. His wife's *Memoirs*, first pub. 1806, give a vivid picture of H., his ideals, and his age; ed. by C. H. Firth in 1885.

Hutchinson, John (1674-1737), theological writer, b. Spennithorne, Yorks. He first served as steward to the duke of Somerset, and other families of position, but ultimately devoted himself to religious studies. In 1724 he pub. *Moses Principia* (Part I), followed in 1727 by Part II, and by many other works, including *Moses Sine Principio*, 1730, *Power Essential and Mechanical*, *Glory or Gravity*, *The Religion of Satan*, etc. According to H. the Bible contains the elements of all rational philosophy as well as of true religion. He denied the physics of Newton. See life by Spearman in H.'s *Works*, 1748-65.

Hutchinson, John (1832-1910), sculptor, b. Edinburgh. He became an academician in 1867. His prin. works are statues of Robert Bruce, John Knox, Queen Victoria, and the Prince Consort.

Hutchinson, Sir Jonathan (1828-1913), surgeon, b. Selby, Yorks, where he was educ., and afterwards entered St Bartholomew's Hospital. He was lecturer in surgery at London Hospital, 1862-83, and surgeon there, 1863-83. He served on the Royal Commission on Smallpox Hospitals (1884) and on the Vaccination Committee (1890-6). He was president of the Royal College of Surgeons, 1889-90. A leading authority on surgery, syphilis, ophthalmology, and skin diseases, he was referred to as the 'greatest general practitioner in Europe.' His name is perpetuated in H.'s teeth, a sign of congenital syphilis to which he first drew attention. He was a prolific writer: his works include *Rare Diseases of the Skin*, 1860, *Clinical Memoir on Certain Diseases of the Eye and Ear Consequent on Inherited Syphilis*, 1863, *Illustrations of Clinical Surgery*, 1878-8, *The Pedigree of Disease*, 1884, *Leprosy and Fish-Eating*, 1906, and the *Archives of Surgery*, 1889-1900, a jour. of 11 vols. written entirely by H. He was knighted in 1908. See *Life and Letters*, by H. Hutchinson, 1946.

Hutchinson, city of Kansas, U.S.A., in Reno co. It is situated on the R. Arkansas, and has salt works, flour mills, grain elevators, and meat-packing works. It is a distributing centre and has a large export trade in grain, flour, dairy products, etc. The Kansas State Fair is held here. It is served by 3 railways. The State Industrial Reformatory is situated here. Pop. 33,575.

Hutier, Oskar von (1857-1933), Ger. soldier who came to the fore during the First World War as an army commander. He was of Fr. extraction; his grandfather is said to have served in the Fr. Army. He distinguished himself in Aug. 1917, when he defeated the Russians in the Riga

area. He was transferred to the W. Front, and appointed to the command of the Eighteenth Army. For the Ger. offensive in Mar. 1918 his army was specially organised and augmented in order to break through the Flesquières salient. During the Allies' counter-offensive in Aug. 1918 his army suffered severely at the hands of the Brit. and Fr. in the Avre-Oise sector. After the war he became president of the Ger. Officers' Society.

Hutt, Lower, see LOWER HUTT.

Hutten, Philip von (c. 1515-46), Ger. adventurer, b. Birkenfeld, and a relative of Ulrich von H. He joined a band of 600 adventurers from all parts of Europe in 1535, who went out to conquer the prov. of Venezuela granted to the Welsers of Augsburg by Charles V. In 1541 he set out at the head of an expedition to seek the mythical El Dorado, and after wandering about for some years returned to Venezuela to find the vice-royalty usurped by Juan de Carvajal, who seized H. and treacherously put him to death. See *Zeitung aus India Junkher Philipps von Hutten*, 1785.

Hutten, Ulrich von (1488-1523), Ger. poet and author, b. at the castle of Steckelberg, near Fulda, Hesse. He was sent to the monastery of Fulda, but fled from there in 1505, going first to Cologne and afterwards to Erfurt and Frankfurt-on-Oder, where he took his master's degree and pub. his first poem. He went from there to Wittenberg and Leipzig, and then to Italy, where he subsequently took service in the emperor's army. Later he returned to Germany and was made poet laureate by Maximilian, 1517. His violent attacks on the papacy eventually forced him into exile in Switzerland, and he d. near Zürich. His chief works were *Ars versificandi*, *Nemo*, *Vadisimus*, *Epistolae*, and many admirable poems in Lat. and German. His works were ed. by E. Böcking, 1859-70. See lives by D. F. Strauss, 1858 (trans. 1874), and H. Holborn, 1929; see also P. Held, *Ulrich von Hutten, seine geistige Auseinandersetzung mit Katholicismus. Humanismus und Reformation*, 1928.

Hutton, James (1726-97), geologist, b. Edinburgh and educ. at the univ. there. He took up successively law, medicine, and agriculture. From 1768 he devoted his life to literary and scientific research. H. was the first to show that the geological hist. of the earth could be interpreted in terms of processes going on at the present day, and that the present was the key to the past. (See also GEOLOGY.) In 1785 he pub. his *Theory of the Earth*, followed in 1792 by *Dissertations on Different Subjects in Natural Philosophy and An Investigation of the Principle of Knowledge*, 1794. For biography of H., see J. Playfair, vol. v of *Transactions of the Royal Society of Edinburgh*.

Hutton, Sir Leonard (1916-), cricketer, b. Fulneck (Pudsey), Yorks. He played for Yorks, 1934-55, and represented England in 79 out of 98 Tests played between 1937 and 1954-5, scoring 6971 runs (2428 against Australia). In the

5th Test v. Australia at The Oval, 1938, he made 364 runs—the world record Test score until G. Sobers' innings of 365 for W. Indies v. Pakistan, 1957-8. His total aggregate in first-class cricket is 40,051 runs, including 129 centuries, and his best season's aggregate 3429 in 1949. Against South Africa at Johannesburg in 1948-9 he and C. Washbrook made the Test record opening stand of 359. Between 1952 and 1954-5 H. captained England 23 times and did not lose a rubber. Knighted 1956; honorary cricket member of M.C.C., 1955. See CRICKET.

Hutton, Richard Holt (1826-97), clergyman and journalist, b. Leeds. Educ. at Univ. College, London, he became a Unitarian minister. A frequent contributor to magazines and reviews, he became editor of the *Spectator* in 1861. His best work is shown in *Essays, Theological and Literary*, 1871, and he also wrote lives of Sir Walter Scott and Cardinal Newman. See J. Hogben, *Richard Holt Hutton of the Spectator*, 1899.

Huxley, Aldous Leonard (1894-), novelist, b. Godalming, Surrey, brother of Julian H. (q.v.); Thomas H. the biologist was his grandfather and his mother was a niece of Matthew Arnold. Educ. at Eton and Balliol College, Oxford, he intended to become a doctor, but was prevented by an eye affection which made him almost blind for a time; the psychological effect of this period during which he was thrown on his own resources coloured his whole life's outlook. Later his eyes partly recovered and he finished the Eng. course at Oxford, taking his degree in 1915. In 1919 he married Maria Nys, a Belgian refugee. He then joined the staff of the *Athenaeum* and did a lot of miscellaneous literary work. From 1923 to 1930 he was in Italy, writing novels and associating with D. H. Lawrence (q.v.); in 1934 he visited Central America and in 1937 settled permanently in California. His main work falls into 2 sections. There are the brilliant and satirical novels of the period between the 2 wars: *Crome Yellow*, 1921, *Antic Hay*, 1923, *Point Counter Point*, 1928, *Brave New World*, 1932, *Eyeless in Gaza*, 1936, and *After Many a Summer*, 1939, which was awarded the Tait Black Prize.

There is a succession of equally brilliant books of essays which show a detached and equable judgment: *On the Margin*, 1923, *Along the Road*, 1925, *Proper Studies*, 1927, *Brief Candles*, 1930, *Vulgarity in Literature*, 1930, *Music at Night*, 1931, *Texts and Prefaces*, 1932, *Ends and Means*, 1937, and *Themes and Variations*, 1950. Later works are *Grey Eminence*, 1941, *Time Must Have a Stop*, 1944, *Ape and Essence*, 1948, and *The Devils of Loudon*, 1952; *The Gioconda Smile*, 1948, is a play, originally a short story, 1922. *The Perennial Philosophy*, 1945, is a study of mysticism, in which latterly he became absorbed; *The Doors of Perception*, 1954, is in the same vein. His *Selected Poems* appeared in 1925.

Huxley, Sir Julian Sorell (1887-), biologist; eldest son of Leonard H. (the eldest

son of Thomas Henry H.). Educ. at Eton (King's Scholar) and Balliol College, Oxford (Brakenbury Scholar); Newdigate prizeman, 1908; first in natural science (zoology), 1909; Naples Scholar, 1909-10. Lecturer in zoology, Balliol College, 1910-12. Research associate of Rice Institute, 1912-13. Assistant prof., Rice Institute, Houston, Texas, 1913-16. Staff-lieutenant, G.H.Q., Italy, 1918. Fellow of New College, and senior demonstrator in zoology, Oxford, 1919. In Oxford Univ. expedition to Spitzbergen, 1921. Prof. of zoology, King's College, London, 1925-7—since then honorary lecturer, Fullerian prof. of physiology, Royal Institute, 1926-9. Biology editor, *Ency. Brit.*, 14th ed. Visited East Africa to advise on native education, 1929. Secretary, Zoological Society of London, 1935-42; Romanes Lecturer, 1943; member of Commission on Higher Education in West Africa, 1944; director of UNESCO, 1946-8; F.R.S., 1938; knighted, 1958. H. is endowed with wonderful powers of lucid exposition. His writings have popularised the most abstruse secrets of biology in the same way as those of Jeans and Eddington did in the realms of astronomy and modern physics. Pub.: *Holyrood* (Newdigate poem), 1908, *The Individual in the Animal Kingdom*, 1912, *Essays of a Biologist*, 1923, *The Stream of Life*, 1926, *Essays in Popular Science*, 1926, *Religion without Revelation*, 1927, *Bird-Watching and Bird Behaviour* (new ed.), 1950, *Science, Religion, and Human Nature*, 1930, *Africa View*, 1931. Has ed. textbooks of animal biology: *An Introduction to Science* (with E. N. Da C. Andrade), vols. 1-4 (Simple Science), 1931-5, *Problems of Relative Growth*, 1932, *The Elements of Experimental Embryology* (with G. R. de Beer), 1934, *Scientific Research and Social Needs*, 1934, *If I were Dictator*, 1934, *We Europeans* (with A. C. Haddon), 1935, *At the Zoo*, 1936, *The Living Thoughts of Darwin*, 1939, *The Uniqueness of Man*, 1941, *Democracy Marches*, 1941, *Evolution, the Modern Synthesis*, 1942, *Evolutionary Ethics*, 1943, *On Living in a Revolution*, 1944, *Evolution and Ethics*, 1933-1943 (part author), 1945, (with D. Clevedon) *Julian Huxley on T. H. Huxley*, 1945, *Religion as an Objective Problem*, 1946, *Man in the Modern World*, 1947, *Evolution in Action*, 1953, *From an Antique Land*, 1954, (as ed., with others), *Evolution as a Process*, 1954, (with W. Suschitzky) *Kingdom of the Beasts*, 1956.

Huxley, Thomas Henry (1825-95), scientist, b. Baling. He matriculated at London Univ. in 1842, and afterwards obtained a scholarship at the Charing Cross Hospital. Here he accomplished a great deal of work, and in 1845 announced his discovery of that layer of cells in the root-sheath of hair which now bears his name. The same year he graduated M.B. in London Univ., and from 1846 to 1850 was assistant-surgeon in H.M.S. *Rattlesnake*. During the voyage he devoted himself to the study of animals, and estab. a morphological plan, dividing

Hydrozoa into Radiata and Nematophora. In 1851 he was made F.R.S., became lecturer on natural hist. at the Royal School of Mines in 1854, and naturalist to the geological survey the following year. In 1855-9 he pub. works chiefly dealing with fossil forms, the most important of which are his memoirs on Cephalaspis and Pteraspis, 1858, the accounts of the Eurypteria, 1856-9, and the description of Dicyonodon, Rhamphorhynchus, and other reptiles. One of his most brilliant successes was his *Theory of the Vertebrate Skull*, 1858, which was read before the Royal Society. In 1863 he pub. *Zoological Evidences as to Man's Place in Nature*, as well as *On the Causes of the Phenomena of Organic Nature*, both of which were widely read and discussed. In 1866 appeared his *Elementary Lessons in Physiology*, his *Manual of the Comparative Anatomy of Vertebrate Animals*, 1871, and *Elementary Biology* (with Martin), 1875. In 1880 there appeared his well-known monograph *The Crayfish*, which led to the introduction of this animal into elementary courses on zoology. But H.'s pub. do not represent all his work; he also filled many important posts. He was an active member of 4 royal commissions, including that of the fisheries of the U.K. (1864-5), Hunterian prof. at the Royal College of Surgeons (1863-9), Fullerian prof. at the Royal Institution (1863-6), president of the Royal Society (1883-5), inspector of fisheries (1881-5), and rector of Aberdeen Univ. (1872-4). Besides this he took a great interest in education and was one of the original members of the School Board for London (1870-2). He was also active as a champion of Darwin's theory of natural selection, propounded in the latter's *Origin of Species*, 1859.

Huy, in the prov. of Liège, Belgium. It stands on the Meuse, about 17 m. SW. of the tn of Liège, and is engaged in distilling and the manuf. of paper. H. possesses a citadel, now partly used as a prison and a military depot, and near by are the ruins of the abbey of Neufmoustier, the burial-place of Peter the Hermit (1115), its founder. Pop. 13,100.

Huygens, Christiaan (1629-95). Dutch mathematician, astronomer, and physicist, b. The Hague. He studied at Leyden and Breda, and in 1649-55 resided successively in Denmark, Holland, France, and England. He soon developed a strong mathematical bent and his future greatness was predicted by Descartes. In 1651 he began to do research in science, and his first essay, *Ezetae quadraturae circuli*, was quickly followed by *Theorematum de quadratura hyperboles, elliptis, et circuli*. In 1655 he discovered Titan, the largest satellite of Saturn, and in 1659 he explained in *Systema Saturnium* the ring of Saturn, whose changing appearances had puzzled Galileo. H. was one of the first to apply the circular pendulum to the construction of clocks, in 1656. In 1690 he pub. important treatises on light and weight. He also improved the telescope and developed the wave theory of light.

His *magnum opus* was the *Horologium Oscillatorium*, 1673, containing innumerable original discoveries. His researches in physical optics, however, are his most important contributions. See P. Harting, *Christiaan Huygens in zijn Leven en Werken geschildert*, 1868; A. E. Bell, *Christiaan Huygens and the Development of Science in the Seventeenth Century*, 1947.

Huysman, Roelof, see AGRICOLA, RUBOLF.

Huysmans, Camille (1871-), Belgian politician, b. Bilsen, and educ. at Liège. He entered Parliament as a Socialist in 1910; was burgomaster of Antwerp 1933-40, when he escaped to England; and was reinstated burgomaster, 1944. From 1905 to 1921 he was secretary of the second International, and between the First and Second World Wars held sev. posts in the Belgian Cabinet. He was prime minister in a coalition gov., 1946-7, and minister of education, 1947-9, a post for which his early professorships at Ypres and Brussels particularly fitted him.

Huysmans, Joris Karl (1848-1907), Fr. novelist, of Dutch descent, b. Paris. His progress from the influence of Baudelaire and later of the Fr. realists and Zola to devout Catholicism is evident in his works, from the realistic *En Ménage*, 1881, through the transitional *A Rebours*, 1884, and *En Route*, 1895, to the great climax *La Cathédrale*, 1898, the epic of Chartres. This last work is scarcely a novel—it is too devoid of incident, too purely introspective; but it is full of beautiful writing and delicate insight into Christian symbolism, and is one of the greatest pieces of mystic literature ever penned. *L'Oblat*, 1905, and *Les Foulées de Lourdes*, 1906, are his chief later works. His *Oeuvres complètes* were ed. in 16 vols. 1928-34. See P. Valéry, *Huysmans*, 1927; H. Trudgian, *L'esthétique de Huysmans*, 1934; A. Garreau, *J. K. Huysmans*, 1947.

Huysum, Jan van (1682-1749), Dutch painter, b. Amsterdam. He was pupil of his father, Justus. His best pictures are those of flowers and fruits, with exquisite colouring and minute detail. His works are to be found in many of the continental galleries, the National Gallery, and a large number of Eng. private collections.

Huyton with Roby, urb. dist. of Lancs, England, 5 m. E. of Liverpool. Pop. 57,470.

Hvar: 1. (It. *Lesina*) Yugoslavian is. in the Adriatic, part of the Dalmatian archipelago. It is 43 m. long and 2½ m. wide, is richly wooded, and has fine beaches and a Mediterranean climate. Grapes, oranges, olives, honey, and wine are produced, and fishing is important. There are remains of prehistoric settlements. Pop. 21,000.

2. (anc. *Pharos*) Cap. of the is. of H. It is an anct fort. tn, with medieval walls and buildings, and has a 13th-cent. cathedral and a 17th-cent. theatre. It is a popular seaside resort. Pop. 2950.

Hven, see VEN.

Hwainang, or Anking, formerly cap. of Anhwei Prov., China, on the Yangtse R., 364 m. W. of Shanghai. Pop. 120,000.

Hwang-Hai, see YELLOW SEA.

Hwang-Ho, see YELLOW RIVER.

Hweichow, or Hsihsien, tn in the Anhwei prov. of China, 100 m. SW. of Hangchow. It is famous for its teas, paper, writing brushes, and Chinese ink.

Hwen-thsang, or Hsüen-thsang (c. 605-64), Buddhist monk of China, b. near Honan. Between AD 629 and 645 he visited 110 different countries and places in India, studying the sacred books and dists. His *Memoirs of the Countries of the West* are an invaluable source for the hist. of the times. This work and a bibliography were trans. into Fr. by Stanislas Julien, 1853-8. See *Hsüen Tsang* (Tribner's Oriental Library), 1888.

Hyacinth: 1. (sometimes *Jacinth*) Name applied to various plants of the family Liliaceae, especially to those of the genus *Hyacinthus*. There are 30 species of this group, and all occur in Africa

and round the Mediterranean; in Britain *H. orientalis*, with all its numerous varieties, is a favourite cultivated plant of the spring-time, and the soil and climate of Holland seem peculiarly adapted to it. The wild *H.*, well-known to Brit. woods, called at times the Eng. bluebell, is *Hyacinth nonscriptus*, another liliaceous plant. It is bulbous, and the flowers are borne in graceful racemes. The grape *H.*, which also occurs in Britain, is *Muscari racemosum*, and the tassel *H.*, *M. comosum*.

2. (also called *Jacinth*) (It. *giacinto*) In mineralogy a variety of zircon. It is an uncommon mineral, and is found in the gem-gravels of Ceylon and in the form of pebbles in parts of New South Wales. The *jacinth* is described by some anct writers as a yellow stone, whilst others refer to it as blue, which would appear to be our sapphire. Many of the gems sold as *H.*s are in reality garnets, orange-brown hessonite, or cinnamon-stone. Optically it is simple to tell the difference, as the garnet has a single and the *H.* a double power of refraction.

Hyacinthe, Père (Charles Jean Marie Loyson) (1827-1912), eminent Fr. preacher, b. Orleans; entered the order of Carmelite friars and preached for some time at Lyons, then at Paris where he attracted great crowds at S. Sulpice and Notre Dame. Suspended in 1869 for indiscipline, he was dispensed from his monastic vows and became l'Abbé Loyson. In 1871 he joined the Old Catholic Congress at Geneva, and in 1872 married in London. In 1879 he estab. a Gallican congregation at Paris, having



HYACINTH

resigned his curacy in the Old Catholic church at Geneva some years before. See L. W. Bacon, *Father Hyacinth*, 1871.

Hyacinthus, youngest son of the Spantark king Amyclas and Diomedea, a youth of extraordinary beauty, beloved of Apollo and Zephyrus. He returned the love of the former, but was indifferent to the latter, who, jealous of his rival, drove the discus of Apollo against the head of H. when they were playing quoits. The youth was killed by the blow, and from his blood there sprang the hyacinth flower. H. was worshipped at Amyclae as a hero, and the Hyacinthia, the second most important of Spartan festivals, was held in his honour.

Hyades (i. 'the rainy'), 7 nymphs who nursed and protected Dionysus, and for their reward were placed in the constellation of Taurus. They were called H. because their heliacal rising foretold wet weather.

Hyæna, name applied to the species of carnivorous mammals belonging to the family Hyænidæ, which range over Africa and Asia. They are massive animals, with coarse, shaggy fur marked with irregular vertical stripes of large black spots; there are generally 4 toes furnished with non-retractile claws; the hind limbs are shorter than the fore, which adds to the ungainliness of their movements. H.s are mainly carrion-eaters; they produce a wailing, almost human-sounding, howl and are the subject of many superstitions. *Crocuta crocuta*, the spotted H., is limited to South Africa, and *Hyæna hyæna*, a striped species, is found in North Africa and S. Asia. *Proteles cristatus*, the aardwolf of South Africa, is sometimes included in this family.

Hyæna Dog, or Cape Hunting-dog, name given to *Lycan pictus*, a species of carnivorous mammals belonging to the Canidae and ranging over a portion of South Africa.

Hybla, name of 3 anc't Sicilian cities: (1) *Hybla Major*, situated on the S. slope of Mt. Etna. (2) *Hybla*, called 'the Little,' and afterwards Megara from the fact that the latter was built on nearly the same spot. (3) *Hybla Heræa*, on the route from Agrigentum to Syracuse. The famous Hyblaean honey was obtained from one of these places, but it is not certain from which.

Hybodonts, group of omnivorous sharks with more advanced fins than those of cladioselachians, and characteristic replacement teeth. They lived from Devonian to Mesozoic times.

Hybrid (Lat. *hybrida*), a cross-breed or mongrel) progeny of 2 distinct varieties, as in the mongrel; of 2 distinct species, the common acceptance of the term; or, much more rarely, of 2 different genera. Early investigators declared that H.s were sterile, but Darwin's experiments clearly demonstrated that this is not always so, as he was able to rear healthy young from a pair of H.s between the domestic goose and the Chinese goose, which represent distinct species. The production of H.s does not appear to be possible between

widely differing parents. In the animal kingdom many variety-H.s have been obtained, and rather less species-H.s. Genus-H.s are rare, though the he-goat and ewe have been successfully crossed, as also have the star-fish and sea-urchin. In the case of species, possibly the commonest examples are the production of the *mule* from the male ass and mare, and of the *hinny* from the horse and female ass; other examples occur in the case of the dog and fox, lion and tiger, hare and rabbit, canaries and finches, etc. Hybridism is spoken of by Broca as being (a) *natural*, when it occurs in the undisturbed natural conditions (the relatively few cases of this quoted are open to suspicion); (b) *incited*, when it is under direct human control; and (c) *artificial*, as in the mixing of the male elements with eggs, as in the case of fish and frogs. Hybridism has become of importance to florists, in the production of new varieties of garden plants, and their successful experiments date back to the 17th cent. Genus-H.s, which are rare, occur, as in the rhododendron, orchid, and azalea. The other forms are more common. *Graft hybridism* has been chronicled, as in the case of Adam's laburnum, and in the bizzarria from the bitter orange and citron. Usually H.s resemble one parent more than the other, and generally they do not breed true (see BREEDING and HEREDITY). In many cases the hybridisation results in definite economic gain, as in the case of the H. Euro-Amor. vine, which is more capable of resisting Phylloxera than either of its parents; Prof. Biffen at Cambridge was similarly able to produce H. wheats which combined good cropping qualities with resistance to attack by the 'rust' fungus.

Hydaspes: 1. See JHELM.

2. **Battle of the**, 326 BC, between Alexander the Great and Porus, an Indian king, whose dominions lay between the Indus and the H. From the graphic account of it in Plutarch we learn that our knowledge of the details comes from the letters of Alexander. According to these, the R. H. was between the opposed forces. Alexander, under cover of a stormy night, effected a landing on an is. in the riv., advanced to the opposite bank, and easily defeated the cavalry and chariots of Porus. The vanquished monarch was taken prisoner, but Alexander not only restored to him his dominions, but made him his lieutenant over them and over large accessions to them from the ters. of conquered free peoples.

Hydatid Disease, **Hydatid Cyst**, or **Echinococcus Disease** (Gk *hydatid*, a watery vesicle). Certain larval forms of tape-worms—in particular of *Taenia echinococcus*—are sometimes present in the body, and it is from these that a H.C. arises. Cysts are formed and the brain, liver, lungs, and kidneys are liable to this disease. The cyst may vary in size from the size of a hazel nut to that of a child's head; and the danger depends upon the size and position of the cyst. The disease can only be treated surgically. H. occurs in persons living in close contact

with dogs, for the adult worm, being small, lives socially in the intestines of the dog, jackal, and wolf. Man becomes infected by eating food contaminated with animal faeces in which are the eggs of the tapeworm. The disease is most prevalent in Iceland, although it is found in most European countries. See CESTODA and BLADDER-WORMS.

Hyde, Douglas (1860-1949), Irish scholar, linguist, and writer, known as 'An Craoibhin Aoihbhinn,' b. Frenchpark, co. Roscommon, and educ. at Trinity College, Dublin. Early in life he took up the study of Irish literature, Gaelic songs, and folktales; he founded the Gaelic League, 1893, and his *Literary History of Ireland*, 1899, was the first attempt to write a comprehensive and systematic hist. of Gaelic literature. He also wrote: *Love Songs of Connaught*, 1894, *The Story of Early Irish Literature*, 1897, many plays in Eng. and Irish for the Irish theatre, and trans. from anct Irish. He was prof. of Irish in the National Univ. of Ireland, 1909-32. Senator in the Irish Parliament, 1925 and 1938; Chairman of the Folklore Institute of Ireland, 1930-4; awarded Gregory Medal, 1937. He became the first president of Éire, being chosen by agreement between the Fianna Fail and Fine Gael political parties as a non-party man in 1938, and continued in office until 1945. He was a Protestant.

Hyde, Douglas Arnold (1911-), journalist, news editor of the *Daily Worker*, 1943-8. He and his wife were received into the Rom. Catholic Church in 1949. His works include *I Believed*, 1950, and *One Front across the World*, 1953.

Hyde, Edward, see CLARENDON.

Hyde, Thomas (1636-1703), Orientalist; he was indeed the greatest master in Oriental subjects of his period. He was chief librarian of the Bodleian Library, 1665-1701; prebendary of Salisbury Cathedral, 1666; archdeacon of Gloucester, 1673; Laudian prof. of Arabic at Oxford, 1691; regius prof. of Hebrew, and canon of Christ Church, Oxford, 1697. His most celebrated work, *Veterum Persarum et Parthorum et Medorum religio*, 1700, was the first attempt to treat the subject in a scholarly fashion by interpreting the Zoroastrian world on the basis of Arabic and neo-Persian sources. H. was also one of the first European scholars to discuss the cuneiform signs, which term he coined.

Hyde, municipal bor. in the co. of Cheshire, England, about 4 m. NE. of Stockport. Its prin. industry is the manuf. of cotton goods, but engineering is also carried on. Pop. 31,280.

Hyde Park, the largest of the London parks (363 ac.), abutting on the W. on Kensington Gardens and on the SE. only narrowly separated from Green Park. It belonged originally to the manor of Hyde, a possession of the abbey of Westminster, until seized by Henry VIII in 1536. Opened to the public by Charles I, it was sold by Parliament in 1652, reverting to the crown at the Restoration. It has been a royal hunting ground, a coach- and

horse-racing track, a resort of the fashionable, a rendezvous for duellists, highwaymen, and agitators; and from its NW. corner the crowds used to watch the executions at Tyburn (q.v.). The Great Exhibition of 1851 (see EXHIBITION) was held here. In modern times it has been mainly a fine open-air rendezvous for Londoners, with boating and bathing in the Serpentine, a lake formed in 1730-3 on the course of the old Westbourne R. At the NW. corner, near Marble Arch, is a gravel expanse where the 'Hyde Park orators' draw crowds, chiefly on Sunday afternoons. The famous riding track, Rotten Row, runs along its S. side. See John Ashton, *Hyde Park*, 1896.

Hyder (Haidar) Ali (1728-82), Indian ruler and commander, the son of a Moham-medan chieftain. He was turned out by his father to seek his own fortune. His brother commanded a brigade in the Mysore army and H. occasionally acted for him, but spent most of his time in studying Fr. army tactics. He induced his brother to purchase artillery and fire-arms, and enrol European sailors as gunners. In 1749 he obtained an independent command, and during the next 12 years became complete master of the Rajah of Mysore and his kingdom. By the conquest of Kanara he gained the treasures of Bednor, and his destruction of the military caste of Nairs of the Malabar coast caused the gov. of Madras to send Col. Smith with a small force to check his advance. A fierce battle was fought at Chengam, 1767, and H. was defeated; he rejected the terms of peace, and, collecting a larger army, came within 5 m. of Madras. A treaty was arranged providing for mutual aid in defensive war. The Brit. broke faith and H. started to revenge himself; in one encounter Col. Baillie's force of 2800 men was utterly destroyed. Finally Sir Eyre Coote defeated him in 3 different battles, and the Brit. fleet seized Negapatam. H. sent his son Tipu to gain help from the Fr., but d. suddenly before his return. This man could neither read nor write, yet became the most formidable rival the Brit. encountered in India, and threatened the extinction of the East India Company.

Hyderabad: 1. Formerly the largest princely state of India, occupying a large portion of the Deccan, the central plateau of S. India. The Nizam of H. was the chief Muslim ruler in India.

History.—Muslim rule and traditions in H. have their origins in the Muslim conquest of the Deccan 700 years ago; in the foundation of H., the cap. of the state, in 1589 by Kutāb Shāh Muhammad Kulī, a descendant of Sultān Kulī Kutāb Shāh, founder of the dynasty at Golconda in 1512; and in the estab. of the Asaf Jahi dynasty in H. in 1713, when Kamr-ud-din Asaf Jah, a distinguished soldier of the Emperor Aurangzēbe was made Nizām-ul-mulk ('Regulator of the State') and Subahdar of the Deccan (but later secured his independence of the Delhi court). After the death of Asaf Jah the right of succession to his power and authority

was disputed by his descendants, the Eng. and Fr. supporting rival claimants in the struggle to promote their own influence in the Deccan; but Olive's victories compelled the Fr. to withdraw from the support of Salabat Jang, who was dethroned and murdered by his brother, Nizam Ali (1761). Ali afterwards devastated the Carnatic (1765) but retreated before the Brit. The Brit. Gov., however, compromised with Ali because they wanted his assistance against Hyder Ali (q.v.),

by which the Nizam's terr. were further enlarged. In 1902, in a treaty made by Lord Curzon, the dist. of Berar was assigned in perpetuity to Great Britain and the H. contingent was incorporated into the Brit. Army. The Nizam thus became the prin. Muslim ruler in India, his state of 82,698 sq. m. having a pop. of 18.7 million in 1951.

When India became independent in 1947, the Indian princes were left by Britain to make their own terms with the



K. Lambert

HYDE PARK, LONDON

and a treaty was concluded with the Nizam in 1766. In 1790 the Brit. Gov. concluded a military alliance with the Nizam in the war with Tipu Sultan, son of Hyder Ali, and Tipu Sultan had to buy peace at the price of half his realm, which was assigned to the Nizam. On the capture of Seringapatam and the death of Tipu, the Nizam's dominions were still further augmented. The Nizam came under the protection of the Brit. Gov. in 1799. In 1857, with the outbreak of the Indian Mutiny, the state of H. and the Nizam's dominions became critical. An attack on the Brit. residency was repulsed by the H. contingent, who displayed all their wonted loyalty to the Brit. connection; and in 1860 a new treaty was made

new govs. of India and Pakistan. The Nizam had long resisted the H. State Congress demand for responsible gov., and now, opposing the demand for accession to India, he declared that H. would be an independent state. The State Congress, a body sponsored by the Indian National Congress (now in power in India), started civil resistance. From the adjoining Andhra dists. of India Communists started creating trouble. In H. the Muslim Association (*Majlis-i-Ittehad-el-Muselmin*), a militant Muslim body with its 'volunteers' (*razakars*), started resisting Congress and Communists and opposing all concessions by the Nizam to his subjects (predominantly Hindus) or to Delhi. This intolerable situation ended

with a brief campaign by the Indian Army in Sept. 1948. H. was put under a military governor. The Nizam tried to appeal to the U.N., but had difficulty as H. was not a member of U.N.O. Later he came to terms with Delhi and continued as Rajpramukh (princely governor) of H., acting through popular ministers till 1956.

The redrawing of state boundaries in 1956 saw the state of H. parcelled out between Andhra Pradesh, Mysore, and Bombay; its cap. became the cap. of the first-made state and the Nizam became a plain citizen of India.

2. The cap. city of Andhra Pradesh state in India, formerly the cap. of H. state, situated on the r. b. of the R. Musi, the 4th largest city in India. The city was founded in 1589 by the king of Golconda. The surrounding wall was begun by the last Mogul governor and was completed by the first Nizam. Some of the most notable buildings, including the famous Char Minar—the 4 minarets—were built by the founder. The prin. mosque, the Mecca Masjid, was built in 1614, the gateway being completed (1692) by Aurungzebe. Much attention was given to the improvement of the tn by 2 chief ministers before 1947, Sir Akbar Hydari and Sir Mirza Ismail. The Osmania Univ., now non-communal, is 6 m. from H. Pop. 1,085,000.

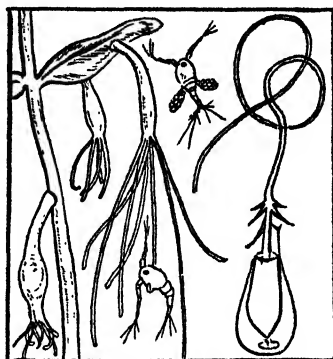
3. The former cap. of Sind prov., Pakistan, 111 m. N.E. of Karachi, and chief tn of Sind. H. lies some 6 m. E. of the R. Indus, and it appears that there must have been a fort on this site from very anct times. The present city and fort date from AD 1782. There are a number of very fine Muslim tombs. H. is famous for the manuf. of 'nats,' embroidered leather saddles for riding camels. It is also noted for extreme heat in hot weather.

Hydra (anct **Hydrea**), is. in the Grecian Archipelago, off the E. coast of the Peloponnese, forming with the neighbouring is. of Dokos the Bay of H. It has an area of about 21 sq. m., and its greatest length is 11 m. Its surface consists of barren rocks, only a few trees growing in favoured spots. H., the chief tn, is built round the prin. harbour, and practically the entire pop. of the is. is centred in this tn. There is a fairly active trade in sponges, weaving, tanning, and shipbuilding. The Hydriots were renowned seafarers and traders in the past, their business leading them to the Baltic and the Americas. They took a prominent part in the War of Independence. Pop. (is.) 2800.

Hydra: 1. Mythical many-headed monster inhabiting the marshes of Lerna in the Peloponnese. Hercules killed this monster as one of his 12 labours with the aid of Iolaus. The middle head was immortal, but they severed it and buried it under a huge rock.

2. Name of the single genus of fresh-water polyps belonging to the coelenterate order Hydrida. The species are widely distributed, being found in Europe, North

America, New Zealand, Australia, and tropical Africa. In Britain they are found attached to weed or plant stalks in still, fresh water; these solitary polyps have a tubular body-wall, and the generative products are developed in the ectoderm; the mouth is placed at the summit of the hypostome, and there is a crown of long, slender, hollow tentacles, varying in number from 6 in *H. vulgaris* and *H. oligactis* to 8 in *H. viridis*. All species are carnivorous, and will swallow Entomostraca of considerable size, until the body-wall expands to twice its usual dimensions.



HYDRA CATCHING CYCLOPS

3. (or 'The Water-Snake') One of the old constellations, being mentioned by both Aratus and Ptolemy, S. of Corvus. From the time of the former it has always been a triple figure; a long snake, represented as trailing upon the ground, bears upon his back a cup (Crater), and near to his tail is seated a crow (Corvus). *Hydra* must be distinguished from *Hydrus* (q.v.).

Hydracids are acids which consist of hydrogen united to an element or group of elements which do not contain oxygen. Hydrochloric acid (HCl) and hydrocyanic acid (HCN) are examples of H. Oxyacids, on the other hand, may be regarded as compounds of water with a non-metallic oxide, e.g. sulphuric acid ($H_2SO_4 = H_2O + SO_3$). See ACID.

Hydragogues, see APERIENTS.

Hydrangea, genus of Saxifragaceae, contains about 35 species which flourish in N. lands. They are hardy flowering shrubs with opposite leaves, and some are of a climbing habit. They require a rich loam soil which should be well drained but not dry. Only in favoured situations in warm parts of the country will they remain out of doors all the winter in safety. They are useful shrubs to grow in tubs or pots, the commonest example found in Britain being varieties of *H. macrophylla* or 'lacecaps' which is a favourite plant for hotel lounges. When

in full bloom H.s are covered by numerous large cymose corymbs of brightly coloured flowers. White, lilac, rose are the more usual colours, and will change from season to season on the same plant if alum or copper is dissolved in the water in order to change its colour. Blue flowers may also be obtained by artificial treatment. Some kinds of H. grow to 10 ft high, but the more usually cultivated kinds are about 3 or 4 ft high. *Macrophylla* varieties make very good garden plants, with superb massed colour effects. They have a flat flower-head like that of the wild guelder rose. Other species are the handsome white *paniculata*, the pink *bretschneideri*, and the varieties of woodland H. (*H. serrata*), such as 'grayswood,' with beautifully-shaped flowers that open white and turn crimson. *H. petiolaris* is a strong climber, with white flowers in June, for lofty N. walls.

Hydrant, see WATER SUPPLY.

Hydrate, term applied to compounds of water with other compounds (or, more rarely, with elements). The water is usually loosely held, and may be driven off by heat or by the action of dehydrating agents such as concentrated sulphuric acid; it is known as *water of hydration* or *water of crystallisation*. Many crystalline salts are H.s; thus blue vitriol or copper sulphate crystals consist of copper sulphate pentahydrate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, while washing soda is sodium carbonate decahydrate, $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$. When the water of crystallisation is driven off from hydrated crystals, the crystalline form is lost, and the resulting powder is known as the *anhydrous* form of the substance. The colour of the hydrated substance is frequently different from that of the anhydrous; thus copper sulphate pentahydrate is blue, while anhydrous copper sulphate is white. The term H. should not be confused with the somewhat similar term *Hydrazide* (q.v.).

Hydraulic Machinery in the widest sense includes prime movers utilising the energy of water falling from a high to a lower level—water wheel, turbines (qq.v.); machines for raising or moving water-pumps (q.v.); machines for transmitting pressure by means of water (see BRAMAH'S PRESS). Water is almost incompressible, and pressure is transmitted through water in pipes with practically no loss. Hydraulic power utilising the potential energy of water under pressure is therefore well suited for use in cranes, elevators, and lifts. Absence of noise, smoke, or fumes is an advantage.

Hydraulic Press, see HYDROSTATICS.

Hydraulic Ram, see PUMP.

Hydraulicking, see MINING.

Hydrazine ($\text{H}_2\text{N}-\text{NH}_2$), colourless strongly alkaline liquid (boiling point 114°C .), obtained by heating H. hydrate with barium oxide. Its salts are prepared from ammonia and hypochlorite; if the product is evaporated with sulphuric acid the sparingly soluble sulphate separates out. H. forms many derivatives in which hydrogen is replaced by alkyl groups, the most important being phenyl

H. ($\text{C}_6\text{H}_5 \cdot \text{NH} \cdot \text{NH}_2$), an oily liquid, which forms crystalline compounds with aldehydes and ketones.

Hydrazole Acid, or **Azoimide** ($\text{NH} \cdot \text{N}_3$), poisonous, highly explosive liquid made by acting on hydrazine with nitric acid. Its lead salt, lead azide, has replaced mercury fulminate as a detonator.

Hydres, see HYDRA.

Hydrides, compounds containing hydrogen, combined with a single other element, but the term is generally restricted to such compounds where the element is a metal. Thus H_2O and HCl would be regarded as oxide and chloride respectively rather than as H. There are roughly 3 classes of metal H.s:

- (i) Those formed by the alkali and alkaline earth metals (i.e. Groups 1 and 2 of the Periodic Table). These are reactive, white solids which evolve hydrogen from water. When molten and electrolysed, hydrogen is evolved at the anode and the metal at the cathode.
- (ii) Those formed by the elements in Groups 4, 5, 6, and 7 of the Periodic Table. They are generally volatile.
- (iii) Those formed by most of the heavy metals and rare earths, the H. so formed being like alloys.

Hydriodic Acid, or **Hydrogen Iodide** (HI), colourless gas, fuming strongly in moist air, and easily soluble in water to give an acid solution which when saturated has a sp. gr. of 1.99, and contains about 90 per cent of HI . Light turns it brown with deposition of iodine. It may be obtained by distilling potassium iodide with phosphoric acid, but is more easily prepared by acting on red phosphorus and iodine with water, or by passing hydrogen sulphide into water containing iodine in suspension. On heating, H. A. is decomposed into its elements. The salts of H. A., the iodides, are crystalline, and as a rule soluble in water. Silver iodide is used in photography, and potassium iodide in medicine to lessen secretions and absorb the products of inflammation.

Hydron, see HYDROGEN ION.

Hydrobromic Acid, or **Hydrogen Bromide** (HBr), colourless, fuming gas with a pungent smell, forming a fuming solution with water, which acts as a strong acid. In the presence of light it is decomposed with separation of bromine. H. A. is formed by the action of phosphoric acid on potassium bromide; it is most conveniently prepared, however, by dropping bromine on to a paste of red phosphorus and water, the gas evolved being passed into water. The bromides, or salts, derived from the acid are crystalline, and, as a rule, soluble in water. They are employed in photography, silver bromide being one of the most important salts that are sensitive to light. Potassium, sodium, and ammonium bromides are also used in medicine, and act as powerful hypnotics and depressants. If taken habitually they are apt to set up a variety of poisoning known as 'bromism.'

Hydrocarbons, compounds of hydrogen with carbon, may be regarded as the parent substances of all organic compounds. There are many classes of H., of which the following are the most important: (1) the paraffins, of general formula C_nH_{2n+2} , which are 'saturated' compounds, with the carbon atoms in an open or a branched chain; (2) 'unsaturated' H. of the ethylene, acetylene type (q.v.), which will unite with elements, such as chlorine or bromine, without undergoing rearrangement of the molecule; (3) H. containing a ring structure, such as benzene, naphthalene, anthracene, (q.v.), in which the carbon atoms are arranged in one or more closed rings. Combination of the above types is possible, giving rise to an enormous number of H., derivations of many of them being found in nature. Petroleum and other mineral oils consist almost entirely of H., those of the paraffin series being usually the most plentiful. See ORGANIC CHEMISTRY; SATURATION; VALENCY.

Hydrocele, collection of serous fluid between the 2 layers of the membrane (tunica vaginalis) covering the testicles or the spermatic cord. The cause of H. is not known, although sometimes it may follow a blow. H. may be congenital, but usually occurs in middle age or after. Temporary relief may be obtained by aspiration of the fluid with a needle but, for permanent cure, operation is necessary. H. is not dangerous but may, from its size and weight, cause inconvenience.

Hydrocephalus, rare disease of infancy characterised by an abnormal collection of fluid in the ventricles of the brain or subarachnoid space. H. is a congenital disease and may start before birth. It is one of the causes of obstructed labour. The cause of it is unknown. As a rule it is progressive; the fluid pressure enlarges the cartilaginous infant skull out of all proportion to the body. At the same time the brain tissue is stretched and flattened around the distended ventricles. Blindness, paralysis, and idiosyncrasy (q.v.) may result and death usually occurs in infancy. Sometimes the disease is arrested and the patient grows up normally with an enlarged head as the only sign. See also DROPSY.

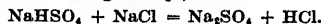
Hydrocharitaceae, family of monocotyledonous plants containing 16 genera and about 70 species. All occur as water-plants in tropical and temperate lands, and a few are marine; they usually inhabit ditches, lakes, and rivers. Nearly all have ribbon-like, submerged leaves, and some have floating leaves; the male and female flowers usually occur on different plants. They are generally in parts of 3, with a 2-whorled perianth; the stamens are in from 1 to 5 whorls; the carpels form an inferior ovary, are united, and vary in number from 2 to 15; the ovary is unilocular, with numerous ovules. The chief genera are *Vallisneria*, *Flodea*, *Hydrocharis*, *Hydrilla*, and *Stratiotes*.

Hydrochloric Acid, or **Hydrogen Chloride** (HCl), colourless gas, closely resembling

hydrobromic and hydriodic acids. It is readily soluble in water to give a strongly acid solution, which is known under the name of 'spirits of salt.' H. A. is formed by the direct union of hydrogen and chlorine, but is most conveniently obtained on a small scale by heating common salt with sulphuric acid, thus:



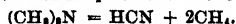
the acid sodium sulphate formed being capable of decomposing another molecule of salt at a high temp., thus:



A concentrated aqueous solution of H. A. has a sp. gr. of 1.2, and contains nearly 43 per cent of the pure acid. The acid is very stable, being unaffected by heat or light; with many metals it reacts with liberation of hydrogen, the chloride of the metal being formed. In the presence of nitric acid, manganese dioxide, and other oxidising agents, chlorine is produced. The chlorides, or salts of H. A., are, as a rule (exceptions: silver, lead, cuprous, and mercurous chlorides), soluble substances. Common salt (q.v.), or sodium chloride (NaCl), is the most important of the chlorides, and is the substance from which most chlorine-containing compounds, such as bleaching powder, potassium chlorate, etc., are prepared. H. A. is largely used as a cleaning and scouring agent for metals, e.g. iron before galvanising, etc., and in the dyestuffs industry. Common salt is used as a preservative, and is a necessary article of food with all animals living on a vegetable diet. Medicinally, it is used internally as an emetic, externally in baths for the relief of sciatica, rheumatism, etc.; and it is injected, in solution, to replace loss of blood.

Hydrochoerus, name of a genus of Lysitricomorphous rodents belonging to the family Caviidae, and consisting of a single species *H. capybara*, the capybara. This is the largest of all rodents, and attains a length of 4 or 5 ft. It is aquatic, having webbed digits furnished with hoof-like nails, and is a native of South America.

Hydrocyanic Acid, or **Prussic Acid** (HCN), first obtained by Scheele in 1782 from the substance known as Prussian blue. It is formed in the decomposition of the glucoside amygdalin, which is present in almonds and other plants. A solution of the acid is conveniently prepared by distilling potassium ferrocyanide with dilute sulphuric acid. The anhydrous acid may be prepared by the action of sulphuric acid on potassium cyanide, or by dehydrating an aqueous solution of the acid with calcium chloride. Technically it is made by heating trimethylamine $(CH_3)_3N$ to a temp. of 800°–1000° C.:



When pure, H. A. is a light colourless liquid, freezing at -15° C. and boiling at 26° C., having the odour of bitter almonds (though many people cannot detect the smell). It is extremely poisonous, a single drop taken internally causing instantaneous death due to paralysis of the

heart. Smaller doses cause pain in the head, giddiness, and nausea, accompanied by paralysis of respiration and of the spinal cord. In cases of poisoning, emetics, followed by injections of ether or alcohol, inhalation of ammonia, and artificial respiration, may be of service. Chemically, H. A. is a feeble acid, faintly reddening litmus. Its salts, the cyanides, resemble the halides, but are poisonous, and enter into complex acid radicals such as the ferrocyanides and ferricyanides. Potassium cyanide is used as a flux and reducing agent in metallurgical work, as a fixing agent in photography, and sodium cyanide chiefly as a solvent for gold in the working of low grade ores. Potassium cyanide (KCN) is prepared commercially either from the ferrocyanide, or sulphocyanide, or, more recently, by the action of ammonia upon a fused mixture of potassium carbonate and coke. The similar sodium salt, sodium cyanide, NaCN, is made by fusing a mixture of sodium ferrocyanide and metallic sodium or, more usually, by heating a mixture of sodium and carbon in a current of gaseous ammonia. Medicinally, H. A. is used in very dilute solution, externally to diminish itching in skin diseases, and internally as a sedative, and to allay vomiting and relieve coughing.

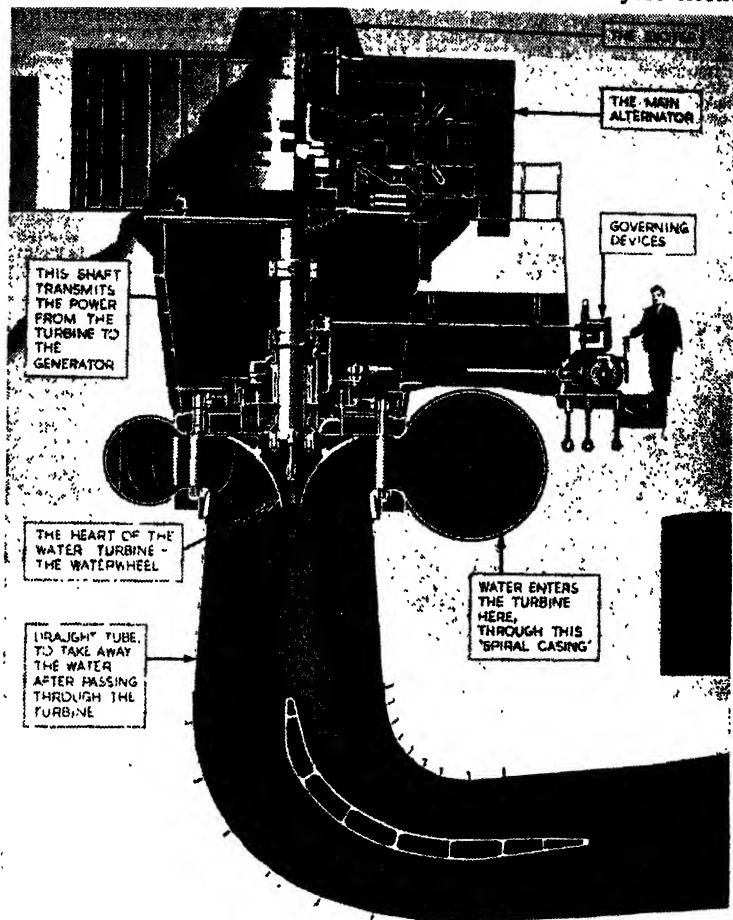
Hydrodynamics. see HYDROKINETICS.

Hydro-electric Power. Whereas the old water-mill, the earliest contrivance for harnessing a natural source of energy, was purely local in application, a modern hydro-power station is usually linked with a number of others by a network of electric transmission lines including one or more steam-power stations, making the energy available over large regions sometimes remote from the source and transcending geographical boundaries. The advantage of such an interconnected scheme lies in the flexibility of operation; the ease of adjusting the power generated to the varying demand, as hydro-power stations can be quickly started up and may be operated by telecontrol or automatically; and continuity of service in case of local breakdown is ensured (see ELECTRIC SUPPLY). The increasing demand for electric power during the present century is mainly due to the development of metallurgical and chemical industries requiring a steady supply of large blocks of power. This need can best be met where water power is readily available. Electrolytic production of aluminium from bauxite and fixation of atmospheric nitrogen by the high-power electric arc are the most familiar examples. The parallel development of highly efficient hydraulic turbines and of electric transmission technique, at voltages up to 380 kV, together with the rapidly rising fuel prices and depletion of coal and oil deposits, has turned the attention to water-power resources previously deemed unworthy of exploitation. The estimates of 'available energy' are being continually revised towards higher values in all countries. In Switzerland the energy obtainable was given 20 years ago as $16 \times$

10^9 kWh per annum, the figure being successively raised to 21×10^9 kWh and lately to 27×10^9 kWh. Sweden gave a figure of 32×10^9 kWh in 1923, the recent value (1954) being 60×10^9 kWh, of which about half is already developed. Norway has lately raised the estimate from 80×10^9 kWh (1918) to 120×10^9 kWh. Taking the world as a whole, about 38 per cent of total electric energy generated derives from water power. In countries without major indigenous fuel sources this proportion is much greater. In Sweden 97 per cent and in Norway over 99 per cent comes from hydro-power developments. Switzerland and Italy are similarly placed, and in France the proportion is 50 per cent. Great Britain is comparatively poor in water-power resources; most of them are in Scotland (Kinlochleven, 30,000 h.p. 0.2×10^9 kWh per annum, and Galloway, 137,000 h.p. 0.9×10^9 kWh per annum) or in North Wales; the total energy is estimated at 6×10^9 kWh.

Any water-power development requires considerable civil engineering works, reservoir, dam, conduits, and riv. regulation, besides power-house and machinery, and to this must usually be added the cost of water rights (fishing, timber flotation) and land. But the cost consists mainly of charges against capital, interest, depreciation, taxes, and insurance. The life of a hydro-power installation is generally longer than that of a thermal power station; reservoir, dam, and conduits are practically permanent, and the cost of operation and maintenance of a hydro-power station is low.

The total power that can be obtained from a waterfall of q cub. ft./sec. with a drop ('head') of h ft is $62.4 \text{ gh}/550$ h.p., and if the efficiency of the turbine is η , the power at the turbine shaft is $62.4 \eta \text{ gh}/550 = 0.1135 \eta \text{ gh}$ h.p., corresponding to an ann. output of $732 \eta \text{ gh}$ kWh. Investigations preliminary to a hydro-electric project involve determination of the flow and the head that are or can be made available. The actual flow in a stream is best measured by erecting a weir across the stream, but where this is impracticable the cross-section is measured and the velocity is obtained with a current-meter, by floats, or by injection of colouring matter or a chemical into the water (see WATER MEASUREMENT). The flow varies according to the season and from year to year and depends on the discharge from the catchment area. This ultimately depends on the precipitation and is affected by the topography and geology of the area, the vegetation, the climate, and the character of precipitation, whether heavy or gentle showers, rain, snow, or hail. Careful examination of these factors, and especially of seasonal and ann. variation of meteorological data, maxima and minima of precipitation, probable frequency and duration of dry and wet periods, flood conditions and occurrence of ice, is essential. The effect of dry periods was strikingly illustrated by the depletion of the water storage in



English Electric Co. Ltd.

DIAGRAMMATIC SECTION OF REACTION TYPE WATER TURBINE AND GENERATOR

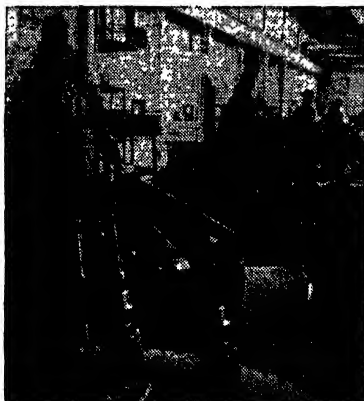
Sweden, following the drought of 1946-7, which forced the authorities to introduce strict rationing of power in 1948.

The final project depends on the natural conditions, and thus no 2 hydro-power developments are exactly alike; yet, roughly, 2 main types may be distinguished: (1) high-head schemes characteristic of mountainous countries, utilising a head of 500-5000 ft, and (2) low-head schemes of 2-100 ft. The latter use reaction turbines, sometimes submerged. Pelton wheels are used for heads above

500 ft, though the modern tendency is towards the employment of reaction turbines up to 1000 ft. Intermediate schemes use either Pelton wheels or turbines, according to the quantity of water. The highest head so far utilised (5700 ft) is at Chandolin in the Rhône valley (Switzerland), with 5 Pelton wheels of 42,500 h.p.

The power that can be supplied continuously is determined by the minimum flow. If it is feasible to shut down at least some of the turbines during the hrs

when demand is low, the water so saved may be impounded for use during high-load hrs. This is called 'pondage' as distinguished from 'storage' of water during seasons or longer periods of increased flow, which demands a large reservoir. Where no lake or other natural storage is available, flooding of a considerable area is necessary. Storage is characteristic of high-head schemes. In a low-head development where large quantities of water are involved, adequate flooding is too costly. The quantity of water obtainable by storage is determined from run-off records over a number of years; the longer the record, the more reliable are the final figures. Successive



National Film Board, Canada

GENERATORS IN A POWER HOUSE AT
SHIPSHAW, SAGUENAY RIVER, QUEBEC

monthly run-off values are added cumulatively and the results plotted as a mass-curve against time, or tabulated values may be used in a step-by-step method for calculating debits and credits. The final choice of reservoir size is dictated by the cost of land and the output required of the power station as a component of the network.

Almost every hydro-power scheme requires a dam, to close the reservoir or as a means of forming or increasing the head as part of the intake to the turbines. Gravity dams, built of timber, earth or rock-fill, or concrete, rest on a wide base and the weight of the dam alone is sufficient to give stability. Buttressed or hollow dams of reinforced concrete slope at 45° on the up-stream and the water pressure ensures stability. Arched dams are usual in narrow gorges. The recently completed Lumiel dam in Italy has both horizontal and vertical curvature.

In high head stations the reservoir is often at a considerable distance from the power-house, and the water is conveyed

from the intake to a convenient point on the hillside above the power-house in a conduit which may be an open canal, a flume, a tunnel, or a pipeline, but generally follows a level curve. The conduit leads into the forebay from which the penstock, a group of steep pipe-lines, conveys the water to the turbines. At the lead-in from the penstock to the turbine gates a vertical surge tank is often provided to relieve pressure variations in the penstock caused by sudden opening or closing of the turbine gates. The conduit leading out of the power-house is known as the tail race. In low-head power schemes the power-house is usually adjacent to or built into the dam.

Hydraulic Turbines are either of the impulse type, of which the Pelton wheel is the only design in actual use, or the reaction type, such as the Francis or the Kaplan turbine. In the Pelton wheel the water issues from a nozzle at the velocity v , theoretically $= \sqrt{2gh}$ ft/sec., gained by falling through the head h ft, in actual practice multiplied by a coefficient (about 0.99) dependent on the shape of the nozzle. The kinetic energy of the jet is $\frac{1}{2}mv^2$, where m is the mass of water, and if the cross-section of the jet is S sq. ft. the mass issuing per sec. is $S \times v \times \frac{62.4}{g}$ and the h.p. of the jet is

$$\frac{62.4}{550} \times S \times \frac{v^3}{2g} \text{ or nearly } 0.8Sh \sqrt{h}. \text{ The}$$

best cross-section of the jet is circular, and the largest practicable diameter is 8 in., giving a cross-sectional area of about 1/3 sq. ft. The quantity of water that can be used is therefore limited, and the Pelton wheel is best suited to high-head schemes. The jet impinges on buckets fixed on the rim of the wheel and thus provides the driving force. As a rule, only 1 nozzle per wheel is used, although in some cases 2 nozzles at an angular distance of 90° from one another have been used, whereby the power is, theoretically, doubled, though the efficiency is decreased by interference between one jet and the splash of the other. The nozzle carries an axial 'needle' which is used for regulation of the jet or for closing the nozzle, in a way similar to that of a needle valve. Speed-regulation of modern Pelton wheels is effected by deflection of the jet or, as this method is wasteful, by combined needle regulation and deflection, the needle and deflector being operated by the governor mechanism. Pelton wheels are usually mounted on a horizontal axis as this arrangement is the simplest.

In the reaction turbines, water enters the runner along the whole circumference through a series of guide vanes so shaped that no shock or eddy formation occurs on passing into the vanes of the runner. The driving force on the runner derives partly from the pressure of the water, partly from the reaction on the runner vanes due to the change in direction of the velocity of the water. By discharging the water through a draft or suction tube,

the full pressure can be utilised, even if the turbine is mounted at some distance above the tail-race level so as to give easy access for inspection and repair. The earliest reaction turbine was the Fournayron outward-flow turbine, in which the runner surrounded the fixed guide vanes. The later Jonval turbine was of the axial-flow type, the guide vanes being placed above the runner, with axial discharge. The Francis turbine is of the inward-flow type, the fixed guide vanes surrounding the runner, but in the modern designs the runner is tapering downwards and the flow is gradually turned in the axial direction. The Kaplan turbine is an axial-flow type, the runner being shaped like the impeller of a centrifugal pump, with only a few (3-6) vanes. The guide vanes of a reaction turbine are surrounded by a spiral volute chamber for delivering the water at a uniform rate around the circumference. This chamber is sometimes (in low-head installations) moulded in the concrete of the foundation. For higher heads (> 100 ft) a steel casing is used. Speed regulation may be effected by a cylinder gate inserted between the guide vanes and the runner and slid axially by the governor. This method gives rise to eddy formation with consequent loss of efficiency and is only used in small plants. In modern plants of larger size the guide vanes are pivoted and their angular position is regulated by the governor. In Kaplan turbines the pitch of the blades of the runner is regulated. Large reaction turbines are usually mounted on a vertical axis. If the unit is placed in the forebay, the shaft rests and turns on a submerged lignum vitae bearing pad. In larger units the runner and generator rotor are suspended from a thrust bearing sometimes mounted above the generator. The design of a bearing of this kind presents some delicate problems. Roller bearings and Michell segmented bearings have given good results.

The electrical parts of a hydro-power station do not differ essentially in design from those of a thermal power station (see POWER STATIONS). Outdoor switchgear and transformers are favoured wherever possible. See D. B. Rushmore and E. A. Lof, *Hydro-electric Power Stations*, 1920; A. H. Gibson, *Hydro-electric Engineering*, 1921; G. Gerard, *Hydro-electric Engineering*, 1949; and Reports of the Conférence Internationale des Grands Réseaux Electriques (C.I.G.R.E.), held annually in Paris.

Hydrofluoric Acid, or Hydrogen Fluoride (HF), colourless liquid, boiling at 19° C. and giving off irritating and dangerous fumes. It is obtained in aqueous solution by heating calcium fluoride (fluorspar) with concentrated sulphuric acid in a leaden retort, and passing the gas evolved into water

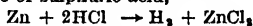


To obtain the pure acid, potassium hydrogen fluoride, KHF_2 , is distilled in a platinum retort, the H. A. being collected in a cooled receiver of the same material.

H. A. is an extremely active acid, and is especially valuable on account of its solvent action on silica and silicates, being used to etch glass. For this purpose the article is covered with wax, and the marks or other designs required are cut upon the wax with a steel tool; on exposing to the acid, the parts laid bare are etched, and the rest of the article is untouched. The fluorides, or salts of H. A., with the exception of those of the alkali metals and argentous silver, are insoluble in water. Of these calcium fluoride is the most important.

Hydrofluosilicic Acid (H_2SiF_6), obtained together with silicic acid by passing silicon fluoride (prepared by the action of concentrated sulphuric acid on a mixture of fluorspar and fine sand) into water. H. A. is only known in aqueous solution, which is colourless. It behaves as a dibasic acid, and forms sparingly soluble potassium and barium salts. It is used in hardening objects made of gypsum.

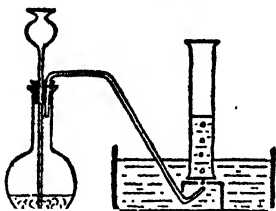
Hydrogen (symbol H; atomic number 1, atomic weight 1), derived from the Gk *hudr*, water, and *gennao*, I produce, is a gaseous element, discovered by Cavendish in 1766, that occurs in nature chiefly in combination with oxygen as water, H_2O . It is the lightest element known, and was formerly taken as the standard for measuring gas density and atomic weights. H. is most conveniently prepared on a small scale by the action of sodium on water, or by the action of zinc on hydrochloric or sulphuric acid,



On the large scale, scrap-iron is used in place of zinc, or the gas is prepared by passing steam over red-hot iron, or by electrolysis of water. More often nowadays it is obtained by removing the carbon monoxide from water-gas (q.v.). It is also obtained as a by-product in the manuf. of many other chemicals, e.g. sodium and caustic soda. When pure, H. is a colourless, odourless gas, which condenses at a low temp. and under great pressure to a liquid boiling at -253° C. and freezing at -259° C. The liquid, which was first produced by Dewar in 1898, has a density only $\frac{1}{8}$ th that of water, whilst the gas has a density $\frac{1}{14}$ th that of air. H. is very insoluble in water, and is incapable of supporting respiration, although not actually poisonous. It burns in air with a non-luminous flame, water being formed; if mixed with air or oxygen and ignited a violent explosion is produced. H. is a powerful reducing agent, combining with the oxygen, chlorine, etc., of bodies with which it is heated. It unites with many elements to form hydrides of very varying properties, such as water, hydrochloric acid, H. sulphide, and ammonia. The metal palladium has the power of absorbing about 900 times its vol. of H., use being made of this property in purifying and storing small quantities of gas. H. is present in all acids, in fact, the acids may be regarded as the salts of H. It is also

present in hydrocarbons, oils, fats, starch, and in almost all natural and artificial compounds of organic chem. Commercially, H. is used as a reducing agent and as a means of producing high temps. in the oxy-H. flame. Its prin. use is in the synthetic manuf. of ammonia (q.v.) from nitrogen and H. H. is also used for hardening oils (e.g. in the manuf. of artificial lard and margarine) and in the preparation of quick-drying varnishes. Although H. was originally taken as the standard for atomic weights, it has been customary of late to take oxygen, = 16, as the basis, owing to the fact that the compounds of the elements with oxygen are more numerous and more readily analysed than those with H. On this arrangement $H = 1.008$ instead of unity.

Heavy Hydrogen.—See HEAVY WATER.



THE PREPARATION OF HYDROGEN

Obtained by pouring hydrochloric acid or sulphuric acid on granulated zinc

Hydrogen Blowpipe, Atomic. When hydrogen is blown through the electric arc the atoms composing its molecules are forced apart from one another. If this atomic hydrogen is then burnt immediately in a blowpipe very high temps. are produced. The A. H. B. is largely used in metallurgy, engineering, etc. See also ZETA.

Hydrogen Bomb, or H-bomb, a device designed to utilise a thermonuclear reaction (q.v.) to produce an explosion. The first such bomb was exploded by the U.S.A. on 1 Mar. 1954 in the Marshall Is. It was equivalent to 14 megatons (i.e. 14 million tons) of T.N.T.—more than the total for the bombs dropped by both sides during the Second World War. In Sept. 1954 Russia exploded an H-bomb for the first time. These bombs produce much more radioactive 'fall-out' than ordinary atomic bombs (q.v.). The presence of radioactive strontium is particularly dangerous because its chemical properties are similar to calcium and therefore if it is ingested it is deposited in the bones and can cause leukaemia, a disorder of the blood which sooner or later leads to death. See J. Shepley and C. Blair, *The Hydrogen Bomb*, 1955; H. W. Heckstall-Smith, *Atomic Radiation Dangers*, 1958.

Hydrogen Bromide, see HYDROBROMIC ACID.

Hydrogen Chloride, see HYDROCHLORIC ACID.

Hydrogen Fluoride, see HYDROFLUORIC ACID.

Hydrogen Iodide, see HYDRIODIC ACID.

Hydrogen Ion. The hydrogen atom is an electrically neutral system composed of a central nucleus of 1 solitary proton (the unit of positive electricity), revolving round which is a single electron (the unit of negative electricity). If such a hydrogen atom loses the attendant electron, it is left with unit positive charge, and is, indeed, a proton. In this condition it is called the (positive) H. I. (In some circumstances a hydrogen atom can take up an electron to form a negative H. I.) These solitary protons can be formed from hydrogen by electric discharge (see DISCHARGE TUBES), or by bombarding gaseous nitrogen with α particles, when some protons are shot away from the nitrogen nucleus.

All acids possess the property of giving H. I. in solution. For example, in an aqueous solution of hydrogen chloride (HCl), ions of hydrogen and of chlorine are present. For every hydrogen atom which has lost an electron, an atom of chlorine has gained one. If an electric current is passed between carbon poles immersed in such a solution, the H. I.s are directed towards the cathode, and, on reaching it, their charge is neutralised, when ordinary hydrogen results. Similarly ordinary chlorine appears at the anode. The sour taste and other specific properties of acids are due to the presence of colourless H. I.s. 'Strong' acids give a larger proportion of these ions at moderate dilutions than 'weak' acids do. When a metal liberates hydrogen from an acid, it gives up electrons to the H. I., thereby becoming itself positively charged.

The H. I. is also capable of relatively rapid movement, and it can also function as a catalyst in many operations such as the inversion of cane sugar, and the hydrolysis of esters, amides, etc. Thus the properties of H. I.s are entirely different from those of ordinary hydrogen.

Strictly speaking, the H. I. is hydrated in aqueous solution giving the hydroxonium ion H_3O^+ .

Hydrogen-ion concentration (H^+) is expressed in terms of equivalents of H. I.s present in grammes per litre. Thus, pure water contains 0.0000001 gm of H. I.s per litre. Therefore $[H^+] = 10^{-7}$. It can be determined usually by (1) measurement of electrical conductivity; (2) determinations of the E.M.F. between the solution tested and a standard electrode; (3) the use of special indicators; (4) osmotic pressure methods. pH value is given by

$$pH = -\log_{10} (H^+)$$

Thus for pure water

$$pH = -\log_{10} (10^{-7}) = 7.$$

Suitable conditions for pH values are essential for many biological, chemical and other operations.

See ACID; INDICATOR; NEUTRALISATION.

Hydrogen Peroxide (H_2O_2) is, when pure, a colourless, slightly viscous liquid

having a sp. gr. of 1.47, freezing ... cooling to a solid, having a melting point of -2°C . It is readily soluble in alcohol or water. The aqueous solution is obtained by the action of dilute sulphuric acid on hydrated barium peroxide, barium sulphate being precipitated. $\text{BaO}_3 + \text{H}_2\text{SO}_4 = \text{BaSO}_4 + \text{H}_2\text{O}_2$. Sodium peroxide, Na_2O_2 , is often used in place of BaO_3 . The aqueous solution obtained may be concentrated by evaporation, followed by distillation under reduced pressure. It is also produced by the steam distillation of persulphuric acid or ammonium persulphate. The pure substance has a bitter taste, a faint odour resembling nitric acid, and is unstable, decomposing explosively under various conditions into oxygen and water. The aqueous solution is more stable, especially in the presence of an acid, and may be kept for a considerable time. It is usually sold in 'vols.,' '20 vols.,' for instance, indicating that 1 vol. of the solution will liberate 20 vols. of oxygen at S.T.P. on thermal decomposition. H_2P is a powerful oxidising agent, liberating iodine from potassium iodide, oxidising sulphides and sulphites to sulphates, and bleaching by oxidation. It also has the property of setting free the oxygen, together with its own available oxygen, from certain metallic oxides and highly oxidised salts, thus apparently acting as a reducing agent. H_2P is largely used in the arts for bleaching ivory, feathers, hair, etc.; as a disinfectant; and also for restoring old oil paintings, by oxidising the black lead sulphide (formed by the action of sulphur compounds in the air on the lead contained in the paints) to the white sulphate. Sodium carbonate and barium percarbonate, prepared electrolytically, have recently been used with success for the manuf. of H_2P . H_2P has been used as a fuel in rockets and submarines. *See also BLEACHING.*

Hydrogen Sulphate, *see* SULPHURIC ACID.

Hydrogenation. Direct combination of gaseous hydrogen with a substance—usually restricted to those examples where direct addition of hydrogen to an unsaturated organic substance takes place.

Sabatier and Senderens (1897) invented the method whereby the body to be hydrogenated reacts with gaseous hydrogen in the presence of catalysts such as nickel, cobalt, iron, platinum, and copper, at a moderate temp. Thus when a mixture of ethylene and hydrogen is passed through a tube containing nickel at $130\text{--}150^{\circ}\text{C}$, ethane is readily formed: $\text{C}_2\text{H}_4 + \text{H}_2 \rightarrow \text{C}_2\text{H}_6$. At higher temps. the reverse process of dehydrogenation is liable to occur. Other examples are: the conversion of acetylene into ethane; aldehydes and ketones into alcohols; nitriles into amines; whilst nickel, which is the most active of the catalysts, can even cause direct addition of hydrogen to benzene derivatives.

Ipatiev (1901) used similar metals and their oxides as catalysts, but worked at high pressures (up to 130 atmospheres). Colloidal metal catalysts have also been

employed at almost normal temps. and pressures.

Industrially, unsaturated oils (e.g. whale, linseed, and cotton-seed oils) are hardened by hydrogenation, using nickel catalysts to give products suitable for edible purposes, and for the manuf. of soap. *See* UNSATURATED COMPOUNDS.

Hydrogenation of Coal, *see* COAL, HYDROGENATION OF.

Hydrographic Surveying, determination of water area, coast-line or banks, depth, vol. and flow, and characteristics of lake or riv. bed and, in its wider sense, coastal surveying, location of shoals and wrecks, buoys, lights, radar stations and beacons, and special features serving as landmarks for navigation, oceanic currents, and tides. Engineering works connected with docks and harbours, irrigation, water supply, water power and riv. regulation are based on data supplied by H. S. Mean sea level (q.v.) is the datum line for all extensive surveys and for joining various surveys together. The exact determination is complicated by the daily, monthly, and ann. variations which may amount to almost a foot during a year. If great accuracy is needed, means over about 19 years should be used. Measurement and records of tides (q.v.) are part of H. S. For shore-line determination, traversing (q.v.) with offsets to the water-line—high- and low-water marks for moderate and large scale—tachometry (*see* SURVEYING AND LEVELLING) is used, or, for wide rivers, triangulation (*see* ORDNANCE SURVEY; SURVEYING AND LEVELLING). Depth-sounding up to 20 ft is usually done with a 2-3-in. diameter timber rod or with a sounding-machine having a flexible metal wire cord wound on a drum and carrying a lead weight. The measurements are taken from a sounding-boat, the point of the sounding being located by angular measurements from land, or from the boat to permanent or temporary signals on land. For deep soundings the echo-sounding-machine is now in universal use. It measures the time taken for sound to reach the bottom and return to the ship. High-frequency (supersonic) waves are easier to direct but require a special high-frequency sound generator. *See* OCEANS AND OCEANOGRAPHY; WATER MEASUREMENT; *see also* S. V. S. C. Messum, *Hydrographic Surveying*, 1910.

Hydrography, scientific description of the waters of the globe. The subject includes: (a) Marine surveying, or the measurement and mapping of the water areas; this will result in the preparation of maps and charts showing the position of seas, lakes, and rivers. Navigation demands from the nautical surveyor some knowledge of the contour of the ocean bed and an accurate outlining of all shallows, deeps, and reefs. The Hydrographic Dept of the Brit. Admiralty, which was estab. in 1795, undertakes the making of such charts under the charge of the hydrographer to the Admiralty. The advent of fast, deep-draught vessels in recent times has made necessary the

recharting of the oceans of the world, and a new survey with new instruments was begun by the Hydrographic Dept in 1948 (see CHART). (b) Hydrology, study of the physical properties of the water masses. Actual composition of the waters must be ascertained, and their varied and varying salinities introduce the wide question of oceanic circulation, to which is related the identification of thermal areas in both horizontal and vertical distributions. The tidal circulation has important bearings on questions of navigation, and the hydrographer is concerned in the preparation of tables showing the 'establishments of ports.' An important economic study in H. has for its objective the analysis of the distribution and movements of those myriads of micro-organisms, *plankton* and *nekton*, which play so great a part in the life-hist. of the various food fishes. Not only does the subject cover the investigation of the salt-water areas, but rivers, and fresh-water lakes also demand special treatment. To realise some of the classes of investigation comprised under this heading, reference should be made to the *Official Reports of the Scientific Results of the Voyage of H.M.S. 'Challenger'* (50 vols., 1880-95). See also OCEANOGRAPHY. See A. F. Meyer, *The Elements of Hydrology*, 1928; J. B. Tait, *Hydrography in Relation to Fisheries*, 1952.

Hydrokinetics, or **Hydrodynamics**, science dealing with fluids in motion. It forms a theoretical introduction to the practical subject of hydraulics. Fluids at rest are dealt with in hydrostatics (q.v.). A fluid may be defined as that which yields to the slightest tangential stress, if it be continued long enough. Thus, though a piece of pitch may be easily smashed into small fragments by a blow of a hammer, in course of time, if left to itself, it will spread itself out over a surface and flow like a liquid by virtue of its weight alone. Hence pitch is a fluid, but since its change of form takes place gradually, it is termed a viscous fluid. All fluids are viscous to some degree, and as the molecules move over one another frictional forces exist which tend to generate heat. But in the case of water, and, in fact, in most liquids, especially alcohol and ether, the viscosity is so small that actual results coincide very closely with the action of a perfect fluid—the ideal fluid, which is inviscid, i.e. which cannot sustain any tangential stress. So the theory of H. deals almost entirely with perfect fluids. Fluid motion may be *steady* or *unsteady*. By steady motion is meant that at any point fixed in space the motion of successive particles of fluid is always the same in magnitude and direction, though it may vary from point to point. If the motion is the same at all points of the fluid, so that the fluid moves like a solid body, it is termed *uniform*. Moving masses of fluid, bounded partly or completely by solid boundaries, form a *stream*. A stream bounded by the same fluid moving differently is termed a *current*, and when bounded by different fluid is termed a *jet*. An *eddy* or a *vortex* is formed by fluid with

a circular or spiral motion. It is proved that a vortex must be endless or have its ends on the free surface of the liquid. The actual path of any particle of fluid is called a *stream line*, and if the stream lines are drawn through all points of a closed curve a *tube of flow* is formed. Thus there can be no flow across the lateral boundaries of a tube of flow. A *line of flow* is such that at any point of its length the tangent coincides with the direction of motion of the point. Stream lines and line of flow are coincident when the motion is steady.

The usual methods for forming the general equations of fluid motion are by means of differential and integral calculus and will be given later, but certain particular cases may be dealt with in a more elementary way. Thus the 'equation of continuity' is obtained from the principle that the amount of incompressible fluid flowing into any completely bounded space, supposed continuously filled with liquid, must be equal to the amount that flows out. If α_1 and α_2 are the areas of any 2 cross sections of a stream, and v_1 , v_2 the components of the velocity of the fluid normal to the cross sections, then the amounts of fluid flowing across the sections in a unit of time are proportional to $\alpha_1 v_1$ and $\alpha_2 v_2$. Hence, $\alpha_1 v_1 = \alpha_2 v_2$, and these velocities are inversely proportional to the areas. Again, consider a liquid moving in a horizontal straight line uniformly—that is, like a solid body—with no relative motion of its parts, and suppose a small portion of the liquid in the shape of a circular cylinder with its axis along the line of motion to become solidified. Let α be the area of its cross section, l its length, p_1 and p_2 the fluid pressures per unit area at its ends, m the mass of a unit vol. of the fluid, and f its acceleration. Then $m\alpha l$ is the mass of the cylinder and $(p_1 - p_2)\alpha$ is the component of the resultant force on it in the direction of motion, since the ends are considered so small that the pressure over them may be taken as constant. Hence, by Newton's second law, $(p_1 - p_2)\alpha = m\alpha l f$, and thus so long as there is an acceleration the pressure varies along a horizontal straight line. Now if p_1 and p_2 are the pressures due to depths h_1 and h_2 below the free surface, it follows that $p_1 - p_2 = mg(h_1 - h_2)$, since the principle estab. in hydrostatics for pressure at given depths holds in this case.

$$\therefore h_1 - h_2 = \frac{p_1 - p_2}{mg} = \frac{mlf}{mg} = \frac{lf}{g}$$

Therefore the free surface of the liquid slopes downwards in the direction of motion at an angle to the horizon (Fig. 1)

$$\tan^{-1} h_1 - h_2 = \tan^{-1} \frac{f}{g}$$

Hence the free surface of a liquid in a vessel carried along at an acceleration makes an angle with the horizontal, and this angle increases if the acceleration increases. If there is no acceleration, the surface is horizontal.

Again, if a vessel, in the form of a right circular cylinder with vertical axis, and

the liquid within it rotate about the axis with a constant angular velocity ω , then any particle of liquid distant x from the axis will have an acceleration $\omega^2 x$ away from the axis. This increases as x increases. The pressure is therefore least on the axis of rotation and gradually increases further from the axis. Hence the free surface will be lowest in the middle and will gradually rise towards the side of

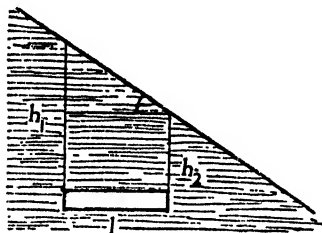


FIG. 1

the vessel (Fig. 2A). It is found that a section of the surface by a plane through the axis of rotation gives a parabola, and the whole surface is a paraboloid of revolution. When the liquid only, and not the vessel, rotates, the outer layer of the liquid in contact with the vessel is at rest. The next layer rotates slowly, and for a time each successive layer has a bigger angular velocity. As in the previous case, the velocity in the middle is zero, and gradually increases outwards, and hence

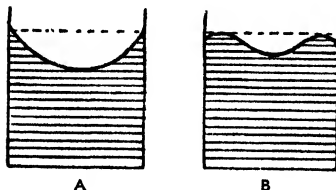


FIG. 2

A, liquid and vessel rotating
B, liquid only rotating

the layer of greatest velocity is somewhere intermediate between the axis and the side of the vessel. The free surface then takes the form shown in figure 2B. The accumulation of mud near the inner bank of a riv. at a bend may be accounted for by continuing the argument.

The same general principle of the pressure gradient, as it is called, has been used to correct the common mistake that as a fluid passes through a pipe of varying cross section, it exercises greater pressure on the sides where the pipe is narrower. In fact, the opposite is true. Let AL, BM, CN, DP (Fig. 3) be small vertical pipes let into such a pipe. Then the

height to which the liquid rises in each of these gives the pressure. It is found that at L and P where the cross section of the horizontal pipe is largest, the heights AL and DP are greatest. Account has to be taken in this experiment of the action of friction, which tends to lessen the height of the columns, and has a bigger effect the further the water travels along the pipe. This principle has a practical use in the Venturi flow-meter.

The principle of the conservation of energy gives a simple proof of an important equation of motion. Let α_1, p_1, v_1 and α_2, p_2, v_2 be the area of the cross section, the pressure, and the velocity respectively at 2 ends of a thin tube of flow, α being so small that p and v may be considered constant for the area. Since there is no flow across the boundaries, the equation of continuity gives $\alpha_1 v_1 = \alpha_2 v_2$. By the conservation of energy, the difference between the work done by the fluid crossing the 2 sections is equal to the total difference between the energy in the 2 cases. In a unit of time the difference between the work done is $p_1 \alpha_1 v_1 - p_2 \alpha_2 v_2$, the difference between the poten-

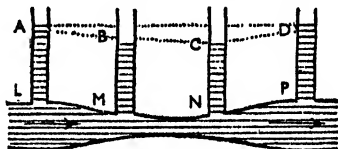


FIG. 3

tial energy in the 2 cases is $m(\alpha_2 v_2 V_2 - \alpha_1 v_1 V_1)$, where m is the mass of a unit vol. and V_1, V_2 the potential energy at the 2 sections, and the difference of kinetic energy is

$$\begin{aligned} & \frac{1}{2} m \alpha_2 v_2^2 - \frac{1}{2} m \alpha_1 v_1^2 \\ \therefore p_1 \alpha_1 v_1 - p_2 \alpha_2 v_2 &= m(\alpha_2 v_2 V_2 - \alpha_1 v_1 V_1) \\ & \quad + \frac{1}{2} m \alpha_2 v_2^2 - \frac{1}{2} m \alpha_1 v_1^2 \\ \therefore p_1 + m V_1 + \frac{1}{2} m v_1^2 &= p_2 + m V_2 + \frac{1}{2} m v_2^2 \end{aligned}$$

and this is the same for any 2 points of the tube of flow.

The Equation of Continuity.—This is the fundamental equation of the hydrodynamics of a perfect fluid. It may be derived as follows. Suppose P is a point (x, y, z) (referred to rectangular co-ordinate axes) in the fluid and let (u, v, w) be the components of the velocity, parallel to the co-ordinate axes, of the fluid at P at time t . If the motion is *continuous*, i.e. if u, v, w are finite and continuous and

$$\frac{\partial u}{\partial y}, \frac{\partial u}{\partial z}, \text{ etc., are also finite, then for}$$

any closed surface drawn in the fluid, the increase in the mass of the fluid within the surface in any time δt must be equal to the excess of the mass of the fluid that flows into the surface over the mass that flows out of it. Let ρ denote the density of the fluid at P (x, y, z) and consider a small parallelepiped $\delta x \delta y \delta z$ with P as centre.

Then the mass of fluid that flows in across the face parallel to the plane yz in time δt is

$$\left[\rho u + \frac{\partial \rho u}{\partial x} \cdot \delta x \right] \delta y \delta z \delta t,$$

and the mass flowing out across the opposite face in the same time is

$$\left[\rho u + \frac{\partial \rho u}{\partial x} \cdot \delta x \right] \delta y \delta z \delta t. \text{ Hence the in-}$$

crease in the mass of the fluid inside the parallelepiped due to this pair of faces

$$\text{is } -\frac{\partial \rho u}{\partial x} \cdot \delta x \delta y \delta z \delta t \text{ in time } \delta t. \text{ Similarly we}$$

can find the increase in the mass of the fluid due to the other pairs of faces and we get for the total gain in mass in time

$$\delta t - \left[\frac{\partial \rho u}{\partial x} + \frac{\partial \rho v}{\partial y} + \frac{\partial \rho w}{\partial z} \right] \delta x \delta y \delta z \delta t. \text{ But since}$$

the mass inside the parallelepiped at time t was $\rho \delta x \delta y \delta z$, the gain in mass in

$$\text{time } \delta t \text{ is } \frac{\partial \rho}{\partial t} \cdot \delta x \delta y \delta z \delta t.$$

Hence equating these expressions we get

$$\frac{\partial \rho}{\partial t} + \frac{\partial (\rho u)}{\partial x} + \frac{\partial (\rho v)}{\partial y} + \frac{\partial (\rho w)}{\partial z} = 0.$$

This is called the Equation of Continuity.

For a homogeneous and incompressible liquid ρ is constant and the above equation reduces to

$$\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} + \frac{\partial w}{\partial z} = 0.$$

This is approximately true for liquids, but the more general equation must be used for gases.

Euler's Equations of Motion.—These are the general equations of motion of the perfect fluid; if p denotes the pressure at the point (x, y, z) in the fluid and X, Y, Z the components of external force per unit mass at the same point, it may be shown that the equations of motion are

$$\frac{\partial u}{\partial t} + u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} + w \frac{\partial u}{\partial z} = X - \frac{1}{\rho} \frac{\partial p}{\partial x}$$

and 2 similar equations.

The study of H is concerned with the integration of these equations, subject to the equation of continuity, applied to the special circumstances of each problem under review. The practical importance of H has increased with the study of aeronautics.

See H. Lamb, *Hydrodynamics*, 1932; S. L. Green, *Hydro- and Aero-Dynamics*, 1939; W. H. Besant and A. S. Ramsey, *A Treatise on Hydro-mechanics, Part 2*, 1946; R. L. Daugherty and A. C. Ingersoll, *Fluid Mechanics with Engineering Applications*, 1954.

Hydrolysis (literally splitting by water), term applied to those chemical reactions in which decomposition is brought about by the action of water, and must not be confused with hydration, in which water is taken up without causing disruption of the molecule, e.g. as in the conversion of quicklime into slaked lime. Examples of H are numerous, e.g. the splitting up

of the salts of weak acids by solution in water, the conversion of esters into acid and alcohol, and the 'inversion' of cane sugar. In some cases H takes place by mere addition of water, but more usually heat is required, and in addition a small quantity of acid or alkali to hasten the reaction.

Hydromechanics, term generally applied to the science dealing with the mechanics of fluids, it includes hydrostatics (q.v.) and hydrokinetics (q.v.).

Hydrometer, instrument for finding the densities of liquids. By density is meant the mass of a unit vol., usually in grammes per cub. centimetre.

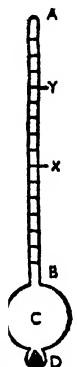
The relative density of any substance is the ratio of its density to that of water. The most elementary form of H consists of a slender glass tube AB ending in 2 spheres C and D . D is loaded so that the instrument floats in a vertical position. By Archimedes's principle (see SPECIFIC GRAVITY), if any body floats in a liquid, its weight is equal to the weight of the liquid displaced. Hence the H will sink deeper in less dense liquids, and the density of a liquid is inversely proportional to the vol. immersed. Since the tube AB has a small diameter only a very small additional vol. is immersed where the H sinks lower, and hence the instrument is open to the objection that only liquids whose densities are nearly equal can be compared by means of any one H . Thus a H constructed for heavy liquids will sink entirely in light liquids. Let the H sink to the mark X in water, and to Y in any given liquid; then, if V and V_1 respectively be the vols. immersed in the 2 cases, the relative density of the given

liquid is $\frac{V}{V_1}$. In practice a graduated

scale is usually fixed to the stem AB and the reading opposite the surface of any liquid in which the H is immersed is the density of the liquid. A common form of H in general use is the lactometer, for finding the density of milk and hence testing its quality.

Sikes's H. is used for ascertaining the strength of spirits. It is a gold-plated brass H somewhat similar in shape to the usual pattern of H . It is used with a series of gold-plated brass weights that can be slotted on to the base of the stem. The 'proof' of spirit can be determined from standard tables when the reading of the H has been taken in the spirit under test.

There are many other forms of H ., such as Twaddell's (used for finding the sp. gr. of mixtures of sulphuric acid and water), Baumé's, and Nicholson's H . The last is well known as a constant displacement H ., and it can be used to compare the densities of different liquids and to find



HYDROMETER

the sp. gr. of solids, but it is of little practical importance outside the school laboratory. Generally speaking the principle of all H.s is the same. In practice it is found to be very difficult to get an extremely accurate result with a H., because of the surface tension and capillarity of liquids, which give the surface of the liquid a curved form where it touches the stem. The possibility of error is diminished, however, by making the stem as thin as possible, and by keeping the instrument clean. In finding the density of a liquid to some degree of accuracy, attention must be paid to its temp., as a rise in temp. lowers the density except for water below 4° C. H.s are used extensively in industry because they are sufficiently accurate for general purposes and they are convenient and easy to use. They can be tested against standard instruments for a small sum at the National Physical Laboratory at Teddington in England. See also HYDROSTATICS.

Hydrometridae, name given to a family of hemiptera-heteropterous insects, often called pond-skaters or water-striders. They live on the surface of water and feed on insects and aquatic debris. *Hydrometra*, *Velia*, and *Mesovelia* are common Brit. genera.

Hydromys, generic name of certain species of rodents belonging to the family Muridae. *H. chrysogaster*, the best-known species, is limited to Australia, and is aquatic in habit; it is a ft or so in length, with a somewhat long tail and yellowish fur; the feet are webbed, and there are only 2 molars in each half of either jaw. *Xeromys* is an allied genus confined to Queensland.

Hydropathy is generally held to mean a definite theory of cure in which the value of water transcends all else, and the administration of other medicinal agents is looked upon as generally deleterious. The fame of H. originated with the work of Vincent Priessnitz (1801-51), a farmer of Grafenberg in Silesia. Priessnitz had administered cold-water bandages to sick and injured animals with marvellous success, and extending his practice to human beings, including himself, wrought such wonderful cures that the water system became the vogue, and estabs. for the direction of the cure were instituted in England, Germany, France, and America. The new practitioners and the orthodox school of physicians denounced each other as quacks for many years; but in course of time ordinary medical practice has absorbed many ideas of the water curers, while the hydropathic estabs. of to-day are less extreme in their regulations than those of former generations. See HYDROTHERAPY.

Hydropericardium, see DROPSY.

Hydrophilidae, name of a family of polymorphous coleoptera (beetles), which are widely distributed and chiefly aquatic. *Hydrophilus*, the typical genus, contains the species *H. piceus*, one of the largest of Brit. beetles.

Hydrophis, see HYDRUS.

Hydrophobia, see RABIES.

Hydrophone, instrument for listening to sound transmitted through water. There are various kinds, one of which estimates depth by means of electric transmissions from the ship on which it is placed reflected from the sea bottom. The principle was used during the First World War to locate Ger. U-boats, but was superseded by Asdic (q.v.). See also ECHO.

Hydrophyllaceae, family of dicotyledonous plants, most of which occur in North America. All are herbs or small shrubs and are generally hairy in appearance. The flowers are regular and hermaphrodite, and are generally in parts of 5; the sepals and petals are 5 in number and united, the stamens are fine and are epipetalous (i.e. attached to the petals); the ovary is superior, and consists of 2 united carpels, usually with numerous ovules in each loculus; the fruit is often a loculicidal capsule. The chief genera are *Hydrolea*, *Phacelia*, *Wigandia*, *Hydrophyllum*, and *Nemophila*.

Hydrophytes, see AQUATIC PLANTS.

Hydroplane (Gk *hudos*, water). The earliest type of H. was invented by Glenn Curtiss and was in the form of an aeroplane with a pontoon fitted to the under portion to enable it to rest upon water.

For subsequent developments see AERONAUTICS; AEROPLANE; SCHNEIDER TROPHY.

The modern light motor boat may also be regarded as a development of the H.; see MOTOR BOATS.

Hydroponics, Amer. term coined to describe the growing of plants by water-culture or soilless methods, by Dr W. F. Gericke, a pioneer in this field. Broadly, the method consists of raising plants—tomatoes, potatoes, roots, bulbs, carnations, herbaceous flowers, etc.—in a porous, moist seed-bed of inert material (peat, leaf-mould, sawdust, straw, wood shaving, spun glass) suspended on a netting of wire over a brief air space and tank containing a water solution of nutrient salts. Anchored in the seed-bed, the plant stems grow upward normally, and the roots downward to feed in the solution. Nutrient solutions are made up of major plant foods (nitrogen, potassium, phosphorus, calcium, magnesium) and others needed in smaller amounts (sulphur, boron, copper, iron, manganese, zinc) to give an effective nutritive balance for the plants grown. Success depends largely upon adequate sunshine, aeration of roots, and control and circulation of the solution. H. succeeds best in warm countries (California, for example), and in greenhouses. Capital costs are high, offset by heavier yields per given area, which are likely to be most profitable when consisting of luxury crops, or when produced in barren tropical areas on air routes. In Britain, the climate apparently does not favour true hydroponic methods, and more attention is being devoted to sand- or gravel-culture methods, etc., in which plants are grown in beds of sand, gravel, cinders, part-peat, or similar inert materials.

watered by a nutrient solution, collected by sub-irrigation and pumped for re-distribution through the bed. As yet, owing to high capital costs and relatively poor results under temperate conditions, H. is unlikely to compete seriously with or supplant soil culture. See Dr W. F. Gericke, *The Complete Guide to Soilless Gardening*, 1940; C. Isabel Hilyer, *Hydroponics*, 1941; A. H. Phillips, *The Science of Soilless Culture*, 1943.

Hydropsy, see DROPSY.

Hydroquinone, see QUINOL.

Hydrostatics, science dealing with the mechanical problems of fluids in equilibrium. Fluids are either liquids or gases. The latter are easily compressible, whilst the former are only very slightly so. The perfect fluid, to which gases and ordinary liquids such as water approximate, is defined as an aggregation of molecules which yield at once to the slightest effort to separate them from each other. From this definition the following fundamental proposition follows immediately, viz., *The pressure of a perfect fluid at rest is always normal to any surface with which it is in contact.* The property here implied extends to all fluids whatever their viscosity, for the molecules of any fluid cannot indefinitely resist the slightest effort to separate them from each other.

The pressure at a point in a fluid is defined as the force per unit area on a very small area surrounding that point. It can be demonstrated theoretically (see bibliography) that in a fluid at rest the pressure is the same in all directions. Two further important relations are: (1) the pressure in a fluid at rest is the same at all points in the same horizontal plane, and (2) the pressure due to the fluid at a point in a fluid at rest is directly proportional to the depth of the point below the surface of the fluid. The first proposition is established by considering the equilibrium of a thin horizontal cylinder of the liquid. The pressure over the vertical ends of the cylinder may be regarded as constant over each, since they are small. By resolving the external forces acting on the cylinder in a horizontal direction it is seen that the 2 forces on its ends are equal and therefore the pressures also must be equal. Hence it follows that the free surface of any liquid at rest is a horizontal plane.

In order to establish the second proposition, suppose P (Fig. 1) be any point in a liquid at rest at a depth h below the surface. Consider again a thin circular cylinder extending vertically from P to the surface M. The forces on the curved surface are all horizontal. Hence the upward force at P supports the weight of the cylinder. If a be the area of the small horizontal end at P and w the weight of a unit vol. of the liquid, then the upward force is wa . Hence the pressure at a depth h in a liquid at rest is equal to wh , where w is the weight of unit vol. of the liquid. An alternative expression is, pressure = $h\rho g$, where ρ is the density and g is the acceleration due to gravity. An elementary experiment for testing the pressure at various depths of a liquid may

be made as follows. Take a metal disc D (Fig. 2) supported by a string S and a hollow glass cylinder open at both ends A and B. Pass the string through the cylinder and pull it tight so as to hold the disc firmly against the lower end B.

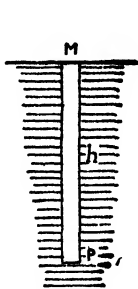


FIG. 1

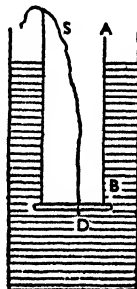


FIG. 2

Lower this into a vessel of water. It will be found that when the end B is sufficiently low, the string may be let go, and the upward pressure of the water alone will be sufficient to hold the disc in position. By using discs of various weights and measuring the depth at which each is just held in position by the water, the law may be verified. In actual practice the reservoir supplying water to a tank is placed on a high level in order to obtain an adequate pressure on the water main. Similarly, canal banks and dock gates are made stronger towards the bottom to stand greater pressures.

Seeing that the pressure in a liquid due to the liquid varies as the depth below the surface, the total pressure on any plane surface is best found by methods of integral calculus. But certain cases are simple. The total pressure on a horizontal plane area has been mentioned above. Thus if a number of vessels of varying shapes have bottoms of the same area and are filled with water to the same depth, the total pressures on the bottoms AB (Fig. 3) are all the same no matter how

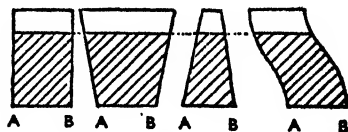


FIG. 3

much water is put into each vessel; for each is the weight of a column of water of the same height and on the same base. In a similar way the resultant vertical pressure on a portion of any surface is the weight of the liquid enclosed by vertical

lines drawn through all points bounding the portion of surface up to the level of the free surface of the liquid. To determine in general the total normal pressure on one side of a plane figure immersed in a liquid, by means of integral calculus, we can proceed as follows. Let S be the area of the figure and let y be the depth of a small portion dS of the figure, ρ the density of the fluid and g the value of the acceleration due to gravity at the place. The total pressure on the area S is $\int \rho g y dS = \rho g \int y dS$. If y be the depth of the centre of gravity of the plane area then by a well-known principle $y = \int y dS / \int dS$, and hence the total pressure on the area S is $\rho g y S$. This expression for the pressure is valid in all cases whether the plane figure is immersed horizontally, vertically, or inclined at any angle to the surface of the liquid. The centre of pressure of any plane area immersed in a fluid is the point of application of the force required to balance the thrust of the fluid, but unless the plane area is horizontal this point does not coincide with

will result in an increase of pressure of 1 lb. weight per sq. in. on B. Hence the force on B is increased by 100 lb. weight when a force of 1 lb. weight is applied to A as shown.

Atmospheric Pressure.—The earth is surrounded by a limited atmosphere which gets less dense at higher altitudes. It may be proved that air has weight by weighing a flask from which the air has been exhausted and weighing it again when full of air. So, as in the case of liquids, the weight of a column of air is supported by the surface on which it rests, and this weight at the surface of the earth is known as atmospheric pressure. It amounts to about 15 lb. on every sq. in. Since, in general, vessels contain air at atmospheric pressure inside as well as outside, this pressure is apt to be unnoticed. A common experiment is performed by means of the Magdeburg hemispheres, which consists of 2 metal hemispheres made to fit exactly together. They may easily be pulled apart by means of handles provided. If, however, the air is exhausted from the interior when they are fitted together, a very large force is necessary to overcome the atmospheric pressure and to separate them. The atmospheric pressure is measured by means of the barometer (q.v.), in which the column of air is balanced by a column of mercury, about 30 in. high. When much water vapour is present in the air it is lighter, and sometimes a column of mercury 28.5 in. high is sufficient to balance it. In a similar way if the barometer is carried up a mt. and thus the column of air diminished in height, the balancing column of mercury is correspondingly diminished in height. A barometer constructed with water would be about 33 ft high. The suction pump depends on the same principle as the water barometer, viz. that the pressure of the air on the surface of the water outside the pipe drives the water up the pipe where the air pressure is less. Since the air pressure is only equivalent to a column of about 33 ft of water, water cannot be raised by means of a single suction pump through a height greater than 33 ft.

Archimedes's Principle states that if a body be immersed in a liquid its apparent loss of weight is equal to the weight of the liquid displaced. Further, a floating body displaces a vol. of liquid whose weight is equal to its own. Thus a piece of cork totally immersed in water will rise to the surface because the weight of water it displaces is greater than its own weight. In a similar way a balloon rises because its total weight is less than that of the air displaced. An iceberg whose sp. gr. (q.v.) is about ten-elevenths will float in water with about ten-elevenths of its vol. beneath the surface (for density and sp. gr., see also HYDROMETER). A most important practical application of the question of floating bodies occurs in shipbuilding. A ship will not be safe unless its shape and the arrangement of its cargo are such that it will right itself after a considerable roll to either side. The first thing then is to

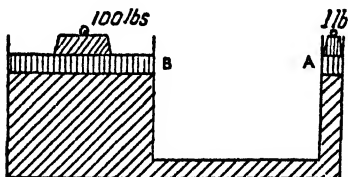


FIG. 4

the centre of gravity of the area. The depth of the centre of pressure can be found from $h = \int y^2 dS / \int y dS$, where h is the depth of a small area dS . Thus if we take a parallelogram with one side in the surface of the fluid, then, calling the length of this side b and that of the other side h , the latter can be divided into a large number of very narrow strips of width dh , and from the above expression $h = \int y^2 b dh / \int y b dh = \int y^2 dh / \int y dh$. By integrating numerator and denominator we find that $h = \frac{1}{3} b h^3 / \frac{1}{2} b h^2 = \frac{2}{3} h$. The same method can be used in all cases and when the plane of the area is not vertical h can be taken as the slant distance from the surface of the fluid measured in the plane of the figure. If the pressure on the surface of a liquid is P , then it follows from the second proposition mentioned above that the pressure at a depth h in a liquid at rest is $P + wh$; in other words a liquid transmits pressure applied to its surface. This principle is employed in the Bramah press.

Fig. 4 explains this. A and B are 2 pistons, one of very much larger area than the other, working in cylinders which are connected as shown. The vessel is filled with water. Suppose A has an area of cross section of 1 sq. in., and B an area of cross section of 100 sq. in. Then a pressure of 1 lb. weight per sq. in. on A

ensure that its vertical position is one of stable equilibrium, that is, that the forces on the ship will restore it to the vertical after a roll to either side. In Fig. 5A let H and G be the centres of gravity of the fluid and the ship with its cargo respectively, H, being lower than G. The line HG may be regarded as fixed in the body and when the ship is displaced through a small angle as shown in 5B the mass of the fluid displaced remains the same, but the vertical through the centre of gravity H' of the new fluid will intersect HG in a new position M which is called the metacentre. The equilibrium of the ship is not safe unless M is above G. It may be shown that M is the centre of curvature at H of the locus of H, which is known as the curve of buoyancy. See T. Barraclough, *Elementary Mechanics and Hydrostatics*, 1940; W. H. Besant and A. S. Ramsey, *Hydrostatics*, 1940; E. Dixon Grubb,

these may be added the more doubtful effects of substances in solution being absorbed by the skin, and the stimulating effects of water containing gases dissolved under pressure. (See BALNEOLOGY.) By far the greater number of water applications for curative purposes are simply temp. applications. Among them may be mentioned cold packs and poultices, hot and vapour baths, and shock baths. The ordinary wet pack consists of a sheet wrung out of cold water and wrapped closely around the body; on this are superposed a number of dry blankets, the patient being kept practically immovable for an hr, when the packing is removed and the patient subjected to a bath at a little above body-temp. The effect is soothing and provocative of increased cutaneous excretion. The cold pack aims at a lower temp. still; the body is surrounded somewhat loosely with a wet

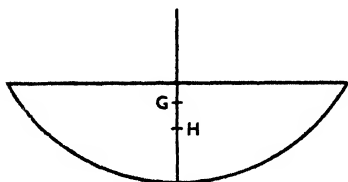


FIG. 5A

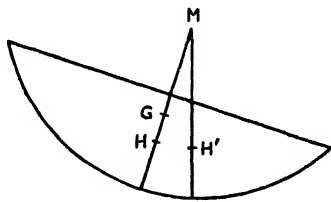


FIG. 5B

Simple Hydraulics for Firemen, 1941; A. S. Ramsey, *Hydrostatics*, 1946; E. E. Preidel, *Intermediate Hydrostatics*, 1948; C. J. L. Wagstaff, *Properties of Matter*, 1953. See also CAPILLARITY; FLotation; HYDROKINETICS; PUMP; SURFACE TENSION.

Hydrotherapy, or Hydrotherapeutics, system of cure which involves the internal or external administration of water. It is a branch of ordinary medical practice, and so is practically distinct from hydrophathy (q.v.), in which the use of water is claimed as the supreme general cure for disease. The internal administration of water is of course necessary for the maintenance of life and the normal process of metabolism. The action of natural waters depends on the mineral substances they contain. Sulphates are present in the waters of Carlsbad and Cheltenham, and those of Harrogate and Bath contain sulphur. All these waters are purgative, and, by removing waste matter from the body, have a stimulating effect, and may be useful in the treatment of gout and rheumatism. Similarly, waters that are diuretic (i.e. promoting the flow of urine) may be stimulating, whereas others, such as the bromo-iodine waters of Woodhall Spa, are sedative.

The external application of water has 2 general purposes: that of skin cleansing, as in the ordinary soap and hot-water bath, and the application in a convenient form of a certain required temp. To

sheet, and the other coverings are loosely arranged to allow evaporation as uniformly as possible. The cold pack is used in cases of hyperpyrexia, that is, in extreme fever. The Turkish bath is really a hot-air bath; it consists of a number of chambers heated to different temps., so that the patient is exposed to a temp. gradually rising to 150° F. or higher, and is then allowed to regain the ordinary temp. of the air by gradations. The effect is to relieve internal congestion by bringing blood to the surface and to excite the peripheral excretory organs to increased activity. A prolonged application of heat locally is sometimes resorted to in order to cause congestion, and thus lead to a greater activity of disease-fighting corpuscles (see BIER'S CONGESTION TREATMENT). Shock-baths, such as shower-baths, douches, wave-baths, etc., depend upon the sudden application of a particular temp. or the rapid alternation of 2 different temps. The effect is stimulating. Brine baths have been extensively used with beneficial results for children suffering from general weakness, rheumatic diseases, and other ailments. Baths aerated with carbon dioxide are prescribed for certain affections of the circulatory system. Saline baths have lately been much used in the treatment of extensive burns.

See R. M. Le Queune, *Hydrotherapy*, 1946; M. B. Ray, *Hydrotherapy and Climatotherapy*, 1936.

Hydrothorax (water on the chest), collection of serous fluid in one or both of the pleural cavities. See DROPSY; PLEURISY.

Hydrotropism, see TROPISM.

Hydroxide, in chem., the term applied to a compound containing one or more hydroxyl (OH) groups, generally in combination with a metal. Thus NaOH is sodium H., Ca(OH)₂, calcium H., and Al(OH)₃, aluminium H. The most important H.s are caustic soda (NaOH), caustic potash or potassium H. (KOH), and slaked lime or calcium H. Ca(OH)₂. In solution, metallic H.s yield hydroxy ions, OH⁻.

Hydroxonium Ion, see HYDROGEN ION.

Hydroxybenzene, see CARBOLIC ACID.

Hydroxyl, the -OH group of atoms. It is present in many classes of compounds, including hydroxides (q.v.), alcohols, sugars, phenols, and many acids.

Hydroxylamine (NH₂OH), unstable substance forming colourless deliquescent needles (melting point, 33° C.). It may be prepared by the action of sodium nitrite on sodium bisulphite, followed by hydrolysis, or by the action of nascent hydrogen, from tin and hydrochloric acid, on ethyl nitrate or nitric oxide. It is also prepared electrolytically by the reduction of nitric acid. H., which is usually prepared in the form of its salts, is a powerful reducing agent, and forms compounds (oximes) by condensation with aldehydes and ketones.

Hydrozoa, name given to a class of Coelenterata belonging to the sub-phylum Cnidaria. This class includes polyps, colonies of polyps which produce medusae by budding, and medusae which rise directly from the egg. The polyps, which are small in size, are generally attached permanently to foreign bodies, but sometimes, as in Siphonophora, such as the 'Portuguese Man of War,' the whole colony may be free-swimming. The first polyp assumes an upstanding position termed the hydranth, which lengthens and buds until it forms a colony or hydrosome. The generative cells which are always ripening and discharging, may arise in a variety of places, but always migrate to the ectoderm of the gonophore. H. feed chiefly on animal substances, and with few exceptions are marine organisms. The class is divided into the orders Hydrida (e.g. the fresh-water hydra), Hydrocorallinae (the corals), Calyptoblastea, Gymnoblastera, and Trachylina Siphonophora.

Hydruntum, see OTRANTO.

Hydrus, constellation in the S. hemisphere, represented as a triangle with approximately equal sides, having a star in the middle point of one side. A fairly close circumpolar constellation, it must be distinguished from Hydra (see HYDRA, 3). Although both mean water snake, H. is the male and Hydra the female.

Hydrus, fabulous water-snake or sea-serpent. Formerly the name of a genus of venomous sea-snakes, now called *Hydrophis*; the hinder part of the body and tail is much compressed and raised vertically to facilitate swimming.

Hyères, Fr. tn in the dept of Var, near the Rade de H. (a bay of the Mediterranean), 10 m. E. of Toulon. It is a fashionable resort on the Fr. Riviera (q.v.), and has a beach (La Plage d'H.) 3 m. SSE. There is a trade in olive-oil, essences, salt (from Salins-d'H., 4 m. E.), and metal goods. Massillon was a native. Pop. 24,000. Offshore lie the Îles d'H. (Porquerolles, Port-Cros, L'Île du Levant, and 2 îlets); they are winter resorts.

Hygieia, Gk goddess of health, daughter of Asclepius, and was worshipped at Corinth, Athens, etc. She is represented as a virgin in a long robe, with a snake drinking from a cup in her hand.

Hygiene (Gk *hygiê*, healthy), embraces all the factors, environmental and personal, which affect the health, physical, mental, and emotional of the individual or the community. Its main concerns are the prevention of disease and the promotion of better health. Improvement in H. is brought about principally by 3 processes: (1) The efforts of organisations, often voluntary, formed to meet specific needs which pioneer new ways, until the possibilities are successfully demonstrated and nation-wide acceptance follows. (2) Legislation which is then administered both nationally and especially by local gov. (3) The education of the individual to practise in his daily life the increasingly clear laws of healthy living and to make fuller use of the facilities provided by society for the promotion of personal and community H.

Hitherto the major emphasis has been on environmental H. and in the past hundred years enormous improvement has taken place evidenced by the complete disappearance of scourges such as plague and cholera, the almost complete control of such diseases as typhoid and dysentery, the very much reduced death rates from other infectious diseases, the much improved infant and maternal mortality rates, increased expectation of life, etc. These advances are undoubtedly due largely to the vast changes effected in environmental H., of which the most important are: (a) provision of ample running water supplies which have been rendered pure by protected storage, followed by physical filtration and chem. treatment; (b) the easy and safe disposal of sewage made possible by running water, by which it is transported through drains to sewage works where tanks, filter beds, etc., result in an effluent which can be safely discharged into rivers, sea, or on to land without danger to health; (c) slum-clearance and improvements in housing conditions with reduction in overcrowding and the better provision of fresh air, ventilation and sunlight, the better provision of both natural and artificial lighting, the increased use of electricity and gas with diminished atmospheric pollution of urb. areas as well as the contribution to cleanliness, comfort, and warmth in the home, the provision of parks, recreation grounds, and open spaces where exercise, fresh air, and sun are more readily available; (d) regular collection of

refuse and its disposal by incineration or controlled tipping, with the diminution of nuisance generally and the reduction in breeding grounds for flies and vermin in particular; (e) the control of food from the abattoir through the channels of wholesale and retail distribution, preparation, and consumption, to promote both improved quality and freedom from contamination of the nation's diet. Special legislation controls the production, handling, heat treatment, and sale of milk, which is of particular importance in the diet of the young and a potential danger if infected.

The control of infections varies very much with the disease concerned. An outbreak of a serious infectious disease, e.g. typhoid, is kept under control by the provision of immediate notification, prompt isolation of the patient at home or in a fever hospital, and thorough investigation to find and control the source of infection before the epidemic spreads. Infections for which there is a proved prophylactic, e.g. diphtheria (q.v.), have been greatly reduced by the widespread immunisation of young children. New drugs for treatment have reduced the incidence of serious complications in measles and whooping cough, while the use of new chemical insecticides, such as D.D.T. and gammexane, has much simplified control of insects such as flies, lice, and bedbugs. The entry into this country of communicable diseases such as smallpox is prevented by Port H. which includes control of all arrivals both at sea and air ports, the quarantine of suspects, and the subsequent disinfection and disinfestation of ships and aeroplanes.

Personal H. is of more recent growth and is promoted principally by services which start before the individual is b. and follow his varied needs up to adult life. The foundations of personal health are laid within the months before birth, and so the care of the pregnant woman is of considerable importance. The observance of simple rules for healthy living, with adequate rest, exercise, and above all a balanced diet with extra vitamin supplements will go far to give the baby a good start. Infants of mothers with inadequate diets during the early months of pregnancy show a higher death rate and succumb more quickly to infections during their first few months of life. Repeated and regular examinations by doctor and midwife detect the earliest departures from normality and ensure that corrective treatment can be applied as soon as possible to avert graver conditions. The provision of experienced obstetrical care, the increasing use of anaesthetics during labour, the growing interest in the training in methods of relaxation ensure a low mortality and morbidity during delivery. Obstetrical hospital beds and emergency mobile obstetric units deal with complications or accidents. Post-natal care helps in the return of the mother to normal health and provides a chance for the prevention of chronic disabilities which may occur after childbirth.

The increasing availability of trained home helps to tide the mother over this difficult period in the home is a recent and welcome development.

After birth the infant becomes the focus of expert care. Prematurity, until recently so potent a cause of neonatal mortality, has received special attention of late years and in some areas of the country premature baby wards have been opened and ambulance units are specifically trained in life-saving methods for the frail infants. 'Flying squads' equipped to deal with gastro-enteritis, still the most fatal disease of infancy, are being developed in the larger cities. Increasing emphasis is being laid on the regular and frequent physical examination of the infant after birth with special attention to his growth, development, care, and feeding. The encouragement of breast feeding, better methods of artificial feeding, the provision of vitamin supplements, talks and demonstrations in the practical problems of mothercraft, visits by health visitors to give advice and help in the home environment are all measures which are bringing about a steady decrease in the infant mortality rate, one of the best available indices for judging the H. of a community.

As the infant grows there is often the provision of day nurseries and nursery schools where the working mother can leave her child under trained supervision and where the toddler gets his first opportunity to adjust to a social milieu. The increased rate of infections in the day nursery, however, and the need of infants for individual mothering make it advisable that the day nurseries (for children under 2) are used only for really necessitous cases. (Children of 3 and 4, on the other hand, who have had a year or so in a nursery school fit in much more quickly to ordinary school life at 5 and gain many psychological as well as social and physical advantages. Children whose psychological development is disturbed are referred to child guidance clinics. Much maladjustment can be traced to the impressionable days of early childhood, and these clinics are being more and more widely used as centres where 'difficult' children, or children showing the early symptoms of anxiety and failure to adjust, can be treated. In this way the more serious later stages of neurosis may be prevented. Often the more important work of these clinics is to help parents to understand the mental needs of the child in order to promote healthy, normal development.)

The health and hygiene of the child during his school years is the special responsibility of the school medical service, with its periodic physical examinations. The early detection and treatment of defects does much to improve his well-being. The child suffering from physical or mental handicaps is discovered early and the provision of special schools of varying types provides education suitable for him. Thus there are different schools for the blind, partially blind, partially deaf.

trippled, educationally subnormal, delicate (open-air schools), maladjusted, and in certain cases, diabetic children. For the ineducable child there is increasing provision of occupation centres and institutional care where necessary, while careful supervision is maintained throughout life. Residential schools and hospital schools, whether temporary or permanent, provide for children who need long periods of convalescence or for whom the home is unable to provide proper care. The school dental service with its emphasis on conservative treatment of the child's teeth is producing a marked improvement in dental health. The provision of school meals and the milk-in-schools scheme has done much to improve the physique of the school child, while after-care agencies help to place the child when he leaves, in employment for which he is physically and mentally capable.

As the school leaver enters industry he comes under the care of the industrial health service, much extended during the 1939-45 war. Canteens providing well-balanced and cheap meals help to ensure the nutrition necessary for good work. In the larger firms the worker is put to the work for which, physically and mentally, he is most suited, and shifts from one dept to another are often made in consultation with the medical officer or psychologist. Absenteeism, sickness rates, output of work, the techniques of different processes, and intra-dept relationships are studied from both psychological and medical aspects, an endeavour to make conditions of employment and H. of surroundings such as to promote the greatest efficiency, health and happiness with a resultant increase in production. In cases of injury or long illness the provision of rehabilitation units raises morale and trains the worker to return to efficient employment.

The breakdown of mental health often arises from the home, and emphasis on the individual as part of his family unit is therefore coming more to the forefront of social H. Marriage guidance councils and family planning associations, among others, are concerned with the need for proper sex education of children, preparation for marriage, advice and counselling within marriage, education in parentcraft, and in ways of increasing the health and happiness of the family. Social H. also includes the more negative aspects of family health as in the campaign against venereal disease and the widespread provision of centres for early recognition and treatment.

The H. of old age is beginning to receive attention as the proportion of the pop. over 65 is rapidly rising. The loneliness, boredom, and physical disabilities of old people are gradually being accepted as a problem for society to tackle and welfare committees, Darby and Joan clubs, special housing accommodation, hostels, travelling canteens, and home helps are all efforts in this direction which are being made to alleviate this problem.

Tropical Hygiene includes most of the scope of H. in this country but concen-

trates much more on the avoidance and control of diseases almost or quite absent from Britain which are still the major scourges of warm climates. The largest group of these are those spread by insects, of which malaria (q.v.), spread by certain anopheles mosquitoes (q.v.) is the most widespread, though plague (q.v.), yellow fever (q.v.), and typhus (q.v.) are more lethal. Other groups of disease widely endemic in the tropics are the intestinal such as typhoid, dysentery and cholera, and the parasitic, both internal and external. In the vast majority of all these diseases the cause, origin, and modes of spread are sufficiently understood to make their control possible by tropical H.

See Sir G. Newman, *The Building of a Nation's Health*, 1939; J. D. Kershaw, *An Approach to Social Medicine*, 1946; W. W. Jameson and G. S. Parkinson, *Synopsis of Hygiene*, 10th ed. 1952; J. L. Burn, *Recent Advances in Public Health*, 1947; A. Massey (ed.), *Modern Trends in Public Health*, 1949; J. Cornerford, *Health the Unknown* (Story of the Pioneer Health Centre), 1947; M. Greenwood, *Some British Pioneers of Social Medicine*, 1948; J. H. Sheldon, *Social Medicine of Old Age*, 1948; W. W. Krueger, *Fundamentals of Personal Hygiene*, 5th ed. 1950; *Health and Social Welfare* (ann.).

See also AIR; CHILD; FOOD AND DIET; HOMEMAKING; HOUSE; HOUSING; PUBLIC HEALTH; SEWAGE; SOIL; VENTILATION; VITAMINS; WATER.

Hyginus, Caius Julius, Lat. writer, appointed librarian of the Palatine library by Augustus. He was, according to some, a native of Spain, or, according to others, of Alexandria, and although originally a slave, was freed by the emperor. His works are mostly lost, but the *Fabularum Liber* and *Poeticon Astronomicum Libri IV* (see H. J. Rose's ed., 1934) are assigned to him. See A. van Staveren, *Mythographia Latina*, 1742.

Hygrometer, instrument for measuring the relative or absolute amount of aqueous vapour in the air. A hygograph measures and records the humidity on a chart similar to that used in a barograph.

Principles of Hygrometry: (a) *Properties of vapours*.—It is a matter of common observation that water exposed to the air disappears more or less quickly. The floors of shops sprinkled with water in the hot weather quickly dry. A damp cloth exposed to the air becomes quite dry; on some days it dries rapidly, on other days very slowly, so that laundresses speak of a 'good drying day' and a 'poor drying day.' The scientific term for the disappearance of the water is evaporation. The water becomes a gas which mixes with the air. This gas is called aqueous vapour. To elucidate the laws governing the evaporation of liquids, Dalton caused them to evaporate under the simplest possible conditions, viz. in a vacuum space, by introducing them into the vacuum above the mercurial column in a barometer. If a small drop of water is allowed to ascend to the top of the

column it disappears very rapidly, filling the space above the mercury and producing a depression of the column. Another drop will also evaporate and produce a further depression, and so on. A stage is reached, however, at which a drop does not evaporate but forms a thin layer of water on the top of the mercury. The introduction of more liquid is not attended by a depression of the mercury column if the temp. is kept constant. The liquid merely floats on top of the mercury, showing that evaporation has ceased. The vapour in the space above the mercury is then said to be saturated. The pressure of a saturated vapour is called the maximum vapour pressure. It increases with the temp., but is quite independent of the presence of other gases. If the vapour pressure at a given temp. is less than the maximum vapour pressure for that temp., the vapour is said to be unsaturated. Regnault determined the maximum vapour pressure of water vapour at various temps. by observing the depression produced by the vapour in a barometer tube. Since the quantity of vapour required to saturate a given space depends solely on the temp., the pressure exerted by saturated water vapour in a space containing air can be found from the tables of saturated vapour pressures compiled by Regnault. (b) *Humidity in the atmosphere*.—Air contains a proportion of water vapour which varies considerably from place to place and time to time. The ratio of the mass of water vapour to the mass of dry air is called the mixing ratio; if, at the same temp., the water vapour were saturated in the presence of a plane water surface this would be called the saturation mixing ratio with respect to water. The percentage ratio of the density of the water vapour actually in the air to the density of the saturated water vapour at the same temp. is defined as the relative humidity. This is approximately the same as the percentage ratio of the mixing ratios and almost identical with that of the vapour pressure to the saturated vapour pressure. Given the temp. of the air, then either of the quantities, mixing ratio or relative humidity, will determine the amount of water vapour in the atmosphere. If the air is cooled a temp. will be reached at which the saturation vapour pressure is the same as the pressure of the water vapour; condensation will then take place. This temp. is called the dew-point, and it is also a measure of the humidity of the atmosphere. Most H.s measure one of these 3 quantities. The absolute quantity of aqueous vapour in the air does not determine its dampness, but merely the proximity to saturation. For example, suppose that, on a summer's day, the temp. is 25° C., and that the pressure of the aqueous vapour is 15 mbs., the air would feel dry because the saturation pressure at 25° C. is 31.7 mbs. On the other hand, suppose that, on a cold winter's day when the temp. is 5° C., the aqueous vapour pressure is 8.3 mbs., the air would feel very damp because the

saturation pressure is 8.7 mbs. at 5° C. The mixing ratio in the former case is low, in the latter case high.

The hair hygrometer depends on the fact that the human hair expands with increasing relative humidity; the instrument is not very accurate and hair has been superseded by gold-beater skin for autographic records. The expansion in length is magnified by a simple lever mechanism, but the instrument needs careful calibration. The same principle is used in the radio-sonde (q.v.). These H.s have an additional disadvantage in that they have a slow response or 'lag,' which becomes greater at the very low temps. experienced at high levels.

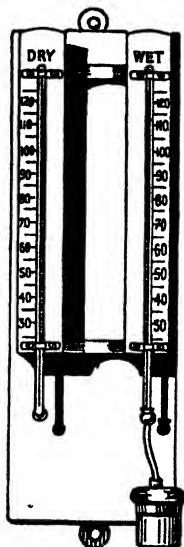
Dew-point Hygrometers.—If an atmosphere containing aqueous vapour is gradually cooled, a temp. will be reached at which the vapour will condense. This temp. is called the dew-point. At this temp. the vapour in the air is saturated. In an unconfined atmosphere the pressure of the vapour will not change during the cooling, hence the actual pressure of the vapour in the air is equal to the maximum vapour pressure at the temp. of the dew-point. If, therefore, the dew-point is determined, the maximum vapour pressure for this temp. as found from the tables of vapour pressures, is the actual pressure of the vapour in the air.

Regnault's Hygrometer.—In this instrument air is aspirated through ether contained in a silver thimble which closes the lower end of a glass tube. Cooling is produced by the evaporation of the ether; when the temp. of the silver surface reaches the dew-point, the polish of the surface becomes dimmed owing to the deposition of moisture. The temp. at which this happens is read on a thermometer. The moment at which the dew appears on the thimble attached to the tube can be ascertained with great delicacy by comparing its surface with that of the surface of a similar thimble attached to the upper end of the glass tube which contains nothing but air.

Dobson-Brewer Frost-point hygrometer.—This instrument was invented during the 1939-45 war by Dr G. M. B. Dobson and A. W. Brewer; it works on a similar principle to Regnault's hygrometer but is faster in operation and more suitably adapted for use in an aircraft and with very low temps. In its modern form the cooling fluid (liquid air) is pumped into a black thimble; a jet of air from outside the aircraft is directed on to the thimble and 'watched' by a photo-electric cell. When the current from the photo-electric cell is constant the deposition of frost on the thimble is balanced by the rate of evaporation and the temp. of the thimble is then the frost-point of the air. With this instrument were made the first accurate measurements of humidity in the high atmosphere; and in 1943 Brewer found the stratosphere to have a very low relative humidity. The instrument has now been made automatic.

Wet- and Dry-bulb Hygrometer.—This instrument, which is also known as a

psychrometer and is used at most observing stations throughout the world, consists of 2 sensitive thermometers attached to a wooden stand (see Fig.). One of the bulbs is covered with muslin and is kept moist by being connected with a reservoir of water by means of cotton wick. Evaporation takes place from the wet muslin, and the bulb of the thermometer which it covers is cooled by an amount according to the hygrometric state of the air. If the air is saturated no evaporation will take place, and the temp. of the wet bulb is the same as that of the dry bulb.



WET- AND DRY-BULB HYGROMETER

The drier the atmosphere the greater will be the difference in temp. between the 2 bulbs. Assmann devised an instrument which sucked air mechanically at a known rate and produced tables for use with it. A sling psychrometer is used in the U.S.A. and tables very similar to Assmann's are used with it. At Washington, in 1947, the International Meteorological Organisation recommended the adoption of the new Goff-Gratch tables of saturation vapour pressure over pure liquid water; these have been used in calculating new humidity tables for aircraft observations. See *Hygrometric Tables*, 4th ed. H.M. Stationery Office (reprinted 1958). See also METEOROLOGY.

Hygroscopic, an instrument used to show comparative moisture in the atmosphere, without indicating its degree. Its action frequently depends on the property that many organic substances (e.g. human hairs, catgut, paper, etc.) have of elongating when moist and contracting as they

dry. One of the most popular forms, used as a weather indicator, consists of a small model house with 2 doors at one of which a man with an umbrella may appear to indicate wet weather and at the other a woman with a sunshade to indicate fine weather. The figures are suspended by catgut which is acted upon by the moisture of the air to produce these results. See **HYGROMETER**.

Hygroscopic, chemical term signifying the property common to certain substances of absorbing moisture from the air. If a substance absorbs so much water that it forms a saturated solution, it is also said to be deliquescent, e.g. calcium chloride. H. substances thus include all those that are deliquescent and also solids which absorb water but do not form a solution, e.g. black copper oxide and substances which are already liquid, e.g. glycerine.

Hyksos (Egyptian *Heka-khasut*, 'rulers of foreign countries'), often called the 'Shepherd Kings,' were Semitic dynasts who ruled Egypt as the 15th and 16th dynasties. Leaving Syria owing to unrest caused by the invasion of Mesopotamia by Aryan tribes, they trickled into the Delta in comparatively small numbers and estab. themselves there as local rulers. In the anarchic state of the country they found little difficulty in extending their control over the rest of Egypt by c. 1730 bc. They respected Egyptian customs and beliefs, and retained Egyptian personnel when they took over the administration. Contrary to propaganda spread by the 18th dynasty, they were not in every way hateful to the Egyptians, and they did not neglect Ra and all the other gods of Egypt, although they introduced the cult of their god Sutekh-Baal, whom they identified with the god Set. (For this period our chief source of information is Manetho, q.v., who was writing 1500 years later.)

Until c. 1610 bc the H. ruled all Egypt, including Nubia. The names of the 2 best-known kings of this earlier period, as given by Manetho, are Salitis and Apophis. There was then a native rising under the princes of Thebes, who became the 17th dynasty. They gradually extended their power northwards until the H. (16th dynasty) were confined to N. Egypt, from Cusae to S. Palestine. It was only during this latter period of conflict that the horse chariot was introduced with other weapons from Asia. The rule of the H. was brought to an end by Ahmes, the founder of the 18th dynasty, c. 1580 bc with the capture of Avaris (q.v.), the H. cap. in the E. Delta, and of Sharuhin (probably Tell Fara) in S. Palestine. As a result of their struggle with the H. the Egyptians not only learned the latest war technique, but changed both their political organisation and mental outlook. See T. Säve-Söderbergh, 'The Hyksos rule in Egypt,' *Journal of Egyptian Archaeology*, xxxvii, pp. 53-71.

Hylas, a youth who was a favourite of Alcides (Hercules), and was abducted by

the *Naiads*, who fell in love with him as he drew water from a fountain in Mysia.

Hylobates, name of a genus of mammals belonging to the Primates, family Anthropomorphidae or Simiidae, and commonly known as the gibbons. *H. syndactylus*, the siamang, is the best-known species.

Hylomorphism, see under SCHOLASTICISM.

Hylton, vil. in the co. of Durham, England. It stands on the R. Wear, about 3 m. W. of Sunderland, and the people are engaged in shipbuilding and the manuf. of iron goods, paper-making, and engineering. Pop. 3000.

Hyman, Paul (1865–1941), Belgian statesman and diplomat, b. Ixelles and educ. at Brussels Univ. He entered Parliament as a Liberal in 1900. In 1914, after the Ger. invasion of Belgium, he went to America on a mission to President Wilson. He was Belgian minister in London, 1915–17; minister of economic affairs, 1917; minister of foreign affairs: 1918–20, 1924–5, 1927–34, and 1934–5. H. attended the conference at Versailles, 1918, and represented Belgium at the Peace Conference, 1919. He presided 1920, at the first Assembly of the League of Nations.

Hymatomelanic Acid, see HUMUS.

Hymen, Gk god of marriage, originally the marriage song, son of Apollo and of one of the Muses, and represented as a beautiful youth with a bridal torch.

Hymenaea, genus of leguminous plants found in tropical America. There are 3 species in all, the commonest being *H. courbaril*, the locust or gum-anime tree. The wood is very heavy and takes a fine polish; the resin known as gum-anime exudes from the stem; the seeds are enveloped in a sweet mealy substance eaten by the Indians.

Hymenoptera, name given to a large order of Insecta which includes the bees, ants, wasps, etc.; its members are characterised by 2 pairs of membranous wings, those on the same side being linked together, well-developed mandibles, movable abdomen, bearing in the case of the female an ovipositor which may or may not be retractile; certain families are furnished with a string, and others with sawing or boring appendages: in the honey-bees, the subordinate mouth-parts are produced into a long, tongue-like proboscis, with which the insect extracts honey from flowers. The head is globular in shape, and mobile, with compound eyes and sev. ocelli on the crown. The larvae are cruciform and have a distinct head. There are over 30,000 species of H., which are grouped into 2 sub-orders, the Symphyta and the Apocrita. To the first belong Tenthredinidae, the saw-flies; Siricidae, the wood-borers, etc. The Apocrita comprise the series Parasitica, with Cynipidae, the gall-wasps; Ichneumonidae, the larvae-wasps, etc.; the series Tubulifera consisting of Chrysididae, the burnished wasps, and the series Aculeata, containing Apidae, the bees, Formicidae, the ants, and many other important families.

Hymettus, flat-topped mt range in Attica, Greece, enclosing the plain of Athens on the E.; over 3000 ft high, about 5 m. from Athens. It has always been famous for its honey. The ancients quarried a much-prized bluish-grey marble.

Hymns (Gk *hymnos*). The word was employed among the Greeks to denote songs or poems in honour of gods or of heroes, or composed for some special occasion. Oldest among these are the so-called Homeric H., a series of brief addresses to various gods. Among the latest pagan Gk productions are the Orphic H., which deal with the rites of initiation into the Hellenic mysteries. In considering the question of hymnology from a Christian point of view, however, the early Heb. poetry is especially valuable. It shows, indeed, the greatest heights to which religious poetry had risen before the beginning of the Christian era. The unique position which the Davidic psalter has ever held in the worship of Christendom indicates the recognition of this fact by all nations. The last great burst of Heb. hymnody is closely connected with the Incarnation, and as such has always held a high place in the services of the Church. For centuries the song of Zacharias (Luke i. 68–79), 'Blessed be the Lord God of Israel,' and the song of the Blessed Virgin Mary (Luke i. 46–55), 'My soul doth magnify the Lord,' are used daily in the choir offices.

As we consider the question of Christian hymnody, it will be well to begin with a definition, that of St Augustine: A H. 'is singing with the praise of God. If you praise God and do not sing you utter no hymn. If you sing and praise not God you utter no hymn. If you praise anything which belongs not to the praise of God, though in singing you praise, you utter no hymn.'

Eastern Hymnody.—The preface to the hymnal of the Mozarabic breviary tells us that as Christianity itself came from the E., so also did the custom of hymn-singing. The words of Pliny, in the famous letter to Trajan (c. AD 110), carry us further than this by showing at how early a date the custom was estab. in Bithynia. Early Gk Christian H. must be divided into 2 classes, the first consisting of those written in the rapidly dying classical metres, the second, and more important, of H. written according to a more Oriental and often Hebraic type. To the first class belongs the oldest of all Christian H., the *Stomion polon adon*, ascribed to St Clement of Alexandria. This H. is simple and childlike, containing nothing but what could be found in the pages of Scripture. A higher mystical level is shown in the H. of St Gregory of Nazianzus (also classical in form) in the 4th cent., dealing chiefly with the doctrines of the oecumenical symbol and the contemplation of the Most Holy Trinity. Trans. of all may be found in A. W. Chatfield's *Songs and Hymns of the Earliest Greek Christian Poets*, 1876. To the same school belong Synesius, Sophronius, and St John of Damascus. Of all

their works only 3 canons by St John of Damascus have received a place in the Gk service-books. The later Gk H. are to be found chiefly in the various church service books, viz. the 12 vols. of the *Menaea*, giving the Prayer of Saints; the *Greater Octaechnus* or *Paraditice*, containing the Ferial office; the *Lesser Octaechnus*, containing the ordinary Sunday services; the *Triodion* (Lenten season); the *Pentecostarion Chormosymon* (Easter and Pentecost); the *Euchologion*, containing the occasional offices; and the *Horologion* or *Hours of Prayer*. These books contain a vast number of H. of which the best selection is to be found in Christ and Parankas's *Anthologia Graeca*, etc. They are best known in England by the trans. of J. M. Neale (q.v.), of which mention may be made of 'Christian, dost thou see them?' (St Andrew of Crete, 660-c. 732), 'Tis the day of Resurrection' (St John Damascene), 'Jesus, Lord of life eternal' (Joseph the Hymnographer), 'Jesus, Name all names above' (Theoctistus of the Studium). But numbers may be found in any modern hymnal.

Syriac.—From the 2nd cent. until almost the close of the Middle Ages, the Churches of Syria, Mesopotamia, and W. Persia produced many excellent H., which are, unfortunately, almost unknown in the W. The names of Hadesanes (Bar-Daisan, b. 154), and Ephraem Syrus (d. 378) must be mentioned. The H. of this last writer still hold an important position in the service books of the Syriac Churches.

Latin Hymnody cannot be traced further back than the beginning of the 4th cent., the earliest name with which any H. can be connected being that of St Hilary of Poitiers, of whom St Isidore of Seville says that he was noted for the composition of H. in verse. Sev. H. in the Mozarabic breviary are ascribed to him. Contemporary with St Hilary was Pope Damasus, to whom two extant H. are ascribed; but the real founder of Lat. hymnody comes somewhat later. This title is unanimously given to St Ambrose (d. 397), to whom a large number of extant H. is attributed. The 12 which the Benedictine editors give as genuine include some of the best-known office H. Among them are 'Aeterna Christi munera' (The eternal gifts of Christ the King), for apostles and evangelists; 'O Lux beata Trinitas' (O Trinity of blessed light, Saturdays in Trinity tide; and 'Splendor Paternae gloriae' (O splendour of God's glory bright), Mondays from Epiphany to Lent. From the 4th to the 11th cent. we have a regular stream of religious poets and hymn-writers, mostly of considerable merit. At the end of the 4th cent. comes Aurelius Clemens Prudentius (q.v.), a Spaniard, from whose poems many of the Ferial H. (e.g. 'Lux ecce surgit aurea') were taken. But his best-known hymn is that for the Nativity, 'Corde natus ex parentis' (Of the Father's love begotten). In the 5th cent. we have the layman Sedulius, the author of the well-known Christmas hymn, found in almost all the

breviaries, 'A solis ortus cardine' (From east to west, from shore to shore). The latter part of this, 'Hostis Herodes impie' (Why, impious Herod, should'st thou fear?), forms the office H. for the Epiphany. Venantius Fortunatus, bishop of Poitiers (d. c. 609), is far better known. To him belongs the glorious Passantide H., 'Vexilla Regis prodeunt' (The Royal banners forward go), and 'Pange lingua gloriosi' (Sing, my tongue, the glorious battle), both of which occur in the Rom. breviary, but in a mutilated form. St Gregory the Great, from whom the Gregorian melodies take their names, wrote much, but is less known. Some 12 H. are attributed to the one Eng. Father, the Venerable Bede (673-735). In the next century Fulbert of Chartres wrote the triumphal Easter hymn, 'Chorus novae Hierusalem' (Ye choirs of New Jerusalem). From the 8th cent. dates also the 'Urbs beata Hierusalem,' which became the hymn throughout Europe for the dedication of a church. This period closes with St Bernard of Clairvaux, the representative of the later mystic school, whose 'Jesu dulcis memoria' (Jesu, the very thought of Thee) is known to all. By the end of the 11th cent. the liturgical use of H. was well estab. throughout W. Christendom, and such H. found a place in all service books. The next few centuries are important for the spread of the Sequence, a hymn sung before the Gospel at Mass, which was developed from the Alleluia by Notker of St Gall (d. 912). The greatest of the medieval sequences, however, is the 'Dies irae, dies illa' (Day of wrath, O day of mourning), the authorship of which is ascribed to Thomas of Celano (q.v.), the friend of St Francis of Assisi.

English Hymnody.—It would be possible to trace the beginnings of Eng. hymnody to the time of Caedmon (7th cent.), but this would lead us by too long a path. It will be well to take up the hist. at the Reformation. When the translations and adaptations of the old service books were made for the new Book of Common Prayer, it was Cramer's intention that the old H. should be trans. likewise. But he had not himself the poetic ability for this task, and the work remained undone until the 19th cent., when sev. translations of the whole body of the anct Sarum H. were made. During the 2 centuries that followed the beginnings of the Reformation there was no book of H. for use in the Church of England. In the Prayer Book itself there was but one trans., that of the 'Veni, Creator' in the Ordinal. Their place was taken, however, to some extent by the metrical paraphrases of the Psalms. Until almost the end of the 17th cent. the most popular was the version by Sternhold and John Hopkins (q.v.), commonly known as the 'Old Version.' This later gave way to the 'New Version' of Nahum Tate (q.v.) and Brady. Sev. from this latter work still find their place in hymnals, e.g. 'As pants the hart for cooling streams.' In 1623 appeared

George Withers's *Hymns and Songs of the Church*, the first attempt at a comprehensive hymn-book, but it never secured any measure of success. Many excellent H. were written also by Bishops Jeremy Taylor (q.v.) and Thomas Kent (q.v.). But the first hymn-book definitely designed for use with the service of the Church of England appeared in 1737, with the title *Collection of Psalms and Hymns*. It was compiled by John Wesley (q.v.), chiefly from the writings of Isaac Watts (q.v.), and pub. at Charlestown in Georgia. Two years later came the official foundation of Methodism, and all later eds. of the book must be classed as Methodist. The next step was taken by M. Madan, who in 1760 pub. *A Collection of Psalms and Hymns extracted from various Authors*, etc., containing 170 H. It is noteworthy that during the rest of the century all the church hymn-books that appeared were built on the foundations of the various Nonconformist collections, and that no great hymn-writer arose within the Church until the production of the *Olney Hymns* by Newton and Cowper. At the beginning of the 19th cent. there was a great outburst of hymn-writing and collecting, which had seen considerable advance even during the first 20 years. The productions of this period are characterised by a striving for uniformity and harmony with the Book of Common Prayer, and by a desire to secure official recognition, which presages the later general return to the old Gk and Lat. H. and their trans. Meanwhile, the 30 years which bring us to the middle of the century saw an even greater increase in the number of hymn-books produced. Seventy-four of these are quoted in Julian's *Dictionary*, and these are but a selection of the most important. Bishop Heber's *Hymns*, 1827, containing the H. of H. H. Milman (q.v.), was an extremely influential collection, and E. Bickersteth's *Christian Psalmody*, 1833, was also important. This last was supplanted by the *Hymnal Companion* by the Rev. E. H. Bickersteth, son of the above named. The influx of these H., more definite in doctrine and more robust in style, led to a gradual exclusion of the Nonconformist and Calvinistic element which had hitherto bulked so large. Moreover, the standard of religious poetry had been raised considerably by the influence of Keble's *Christian Year*. The *Hymnal* of 1852 and 1854 confined itself entirely to Lat. H., their excellence being enhanced by the beauty of Neale's trans. But the hundreds of hymnals which had now issued from the press had left Eng. hymnody in great confusion, and this resulted in the pub. of *Hymns* (later *Hymns Ancient and Modern*), 1861, a collection which at first contained only 130 H., but which rapidly increased in size and in popularity until it almost entirely supplanted all other collections. At the beginning of the 20th cent. sev. new hymn-books, all aiming at a higher level of scholarship, were produced. The most important of these are the *English*

Hymnal, 1906, and the *Oxford Hymnal*, 1908.

Nonconformist Hymnody.—The Baptists long resisted the practice of singing H. Their first hymn-writer was B. Keach, about 1673. The names of J. Stennett (1663–1713), S. Stennett, grandson of the former (1728–95), and W. Noel (1799–1873) are also worthy of mention. Both the Particular Baptists and the General Baptists now have official hymn books. The Congregationalists have produced many hymn-writers of great merit. Greatest of these is Isaac Watts (1674–1748). The names of Philip Doddridge and Josiah Conder are also well known. In 1859 was pub. officially the *New Congregational Hymn Book*. Since that date, however, sev. other Congregational hymnals have been issued. The greatest hymn-writer of Methodism is Charles Wesley, to whom sev. thousand H. of varying merit are ascribed. Many of them are among the most popular of H., both in the Church of England and among the Methodists.

Mention may now be made of the H. known as carols. The word was originally applied not to a song, but to a dance. The song was later added, and the name included both. Finally the dance was dropped, and the song retained the name. Carols, secular and religious, both in the vernacular, were very popular during the Middle Ages, being sung at festivals both in and out of church. Their hist. is especially connected with the miracle and mystery plays. Odd scraps of Lat. which seemed to link these popular songs to the liturgical service of the Church are frequently found in them. From the Reformation to the 19th cent. we have almost an entire blank in the hist. of the carol. Then collections of modernised versions of the old carols were made and new ones were written. To this period belongs *Good King Wenceslas*, by J. M. Neale. The most popular collections are those by Chope and Woodward. See also BICKERSTETH, EDWARD; HEBER, REGINALD; KEBLE, JOHN; LYTE, HENRY FRANCIS; MOODY, DWIGHT; LYMAN, SANKEY, IRA DAVID; TOPLADY, AUGUSTUS MONTAGUE. See J. Julian, *Dictionary of Hymnology*, 1892 (last ed. 1907), to which this article is much indebted; J. M. Neale *Hymns of the Eastern Church* 1863; J. Pauly, *Hymni Breviarii Romani*, 1868–70; C. A. G. Chevallier, *Poésie liturgique du moyen âge*, 1893; Norman, *Hymnarium Salisburienae*, 1851, and H. A. Daniel, *Thesaurus Hymnologicus*, 1853, with J. M. Neale's dissertation; Hastings, *Encyclopaedia of Religion and Ethics*, 1914, vol. 7; F. J. Gillman, *The Story of Our Hymns*, 1921; W. Procter, *The Story of Sacred Song*, 1925; N. Mable, *Popular Hymns and their Writers*, 1948.

Hyndman, Henry Mayers (1842–1921), Socialist, b. London; educ. privately and at Trinity College, Cambridge. He travelled widely and occupied himself with journalistic work. In 1881 he founded the Social Democratic Federation and agitated actively for social

reform. In 1911 the Social Democratic Federation was merged in the Brit. Socialist party, with H. as chairman. This new party split into fragments during the First World War—most members joining the Communists; and in 1920, under H.'s auspices, the S.D.F. was revived. Amongst his numerous pubs. are: *Indian Policy and English Justice*, 1874, *England for All*, 1881, and *Historical Basis of Socialism in England*, 1883. See life by F. J. Gould, 1928.

Hyne, Charles John Cutcliffe Wright (1865–1944), novelist and traveller, b. Bibury, Gloucestershire, son of a clergyman. Educ. at Bradford Grammar School and Cambridge, he travelled widely in search of literary material. His most popular story is *Adventures of Captain Kettle*, 1898, which appeared in *Pearson's Magazine*. Other stories include *The Lost Continent*, 1900, *Mr. Horrocks, Purser*, 1902, *Thompson's Progress*, 1902, *Red Herrings*, 1918, *People and Places*, 1930, *Steamboatmen*, 1942, and various sequels to the *Adventures of Captain Kettle* which continued until 1938. *My Joyful Life*, 1935, is an autobiography.

Hyoid Bone, U-shaped bone lying immediately above the thyroid cartilage of the larynx, and near the root of the tongue, to the muscles of which it gives attachment. It consists of a more or less rectangular body (*basihyal*), and 2 pairs of unequal *cornua* or horns; the greater curve upwards and backwards; the smaller, about $\frac{1}{2}$ in. in length, are attached to the basihyal near its junctions with the great *cornua*. See also LARYNX.

Hyoscine, or *Scopolamine*, important alkaloid of the formula $C_{17}H_{21}O_3N$. It was used in obstetrics, in combination with morphia (q.v.), to produce narcosis and 'twilight sleep,' but more modern treatments have superseded this form of therapy. Hyoscine was discovered by Schmidt in 1888; it is alternatively known as scopolamine, and occurs in the plants *Hyoscyamus niger*, *Datura stramonium* and *Scopolia carniolica*, etc.

Hyoscyamine, poisonous crystalline alkaloid, obtained from henbane (q.v.); it is isomeric with atropine (q.v.). When moist, it has a stupefying odour; it is used as a sedative and narcotic. It is found occurring with hyoscine, as an alkaloid $C_{17}H_{21}O_3N$, syn. scopolamine. Hyoscine, usually given in the form of hyoscine hydrobromide, is an effective depressant of the cerebrum and motor centres of the spinal cord and used to allay insomnia, mania, and sexual excitement. It is also given to prevent motion sickness. Together with morphia, hyoscine (scopolamine) was the drug given to induce sleep and analgesia in childbirth in the so-called 'twilight-sleep' treatment; this treatment has been largely abandoned now.

Hyperallage (Gk *hyper*, under; *allasscin*, to change), also called transferred epithet, is a figure of speech in which an epithet is transferred from one word to another, as in speaking of 'the condemned cell,' 'a sleepless pillow,' or in Gray's line 'And

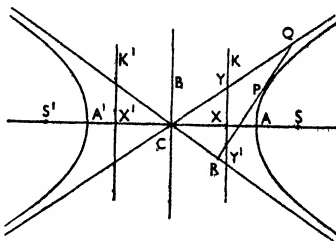
drowsy tinklings lull the distant folds.' See also FIGURE OF SPEECH.

Hyperatia (c. 370–415), female philosopher and mathematician, daughter of Theon, b. Alexandria. She lectured for a time in her native city, and then became the head of the Neoplatonic school there. Her deep erudition, sound judgment, and fine elocution gained for her the admiration of all her hearers, and her house became the resort of men of learning and distinction in Alexandria—amongst others, Orestes, the prefect of the city, with whom she was accused of being too intimate, and was torn to pieces by a mob of savage Nitrian monks. For the little authentic knowledge about H., see Socrates, *Hist. ecclesiastica*, vii. 15. See also C. Kingsley, *Hyperatia* (novel), 1853; R. Asmus, *Hyperatia in Tradition und Dichtung*, 1907.

Hyperaesthesia, medical term meaning increased sensibility of the sensory nervous system, due to diseased conditions; often symptomatic of hysteria.

Hyperbaton (Gk *hyper*, over; *bainetn*, to step) is the transposition of words or phrases out of their normal order for the sake of effect, as in 'Great is Diana of the Ephesians.' It is also used for the trespassing of a word from its own phrase or clause into another, as in Shakespeare's line, 'Nor scar that whiter skin of hers than snow.' See also FIGURE OF SPEECH.

Hyperbola, one of the conic sections (see GEOMETRY, *Higher Pure Geometry*). The



HYPERBOLA

figure shows the 2 branches of the curve, C being the centre, S and S' the foci, A and A' the vertices of each branch, and XX' and XX' the directrices. The lines CQ and CR prolonged each way are asymptotes to each curve. An interesting property of the asymptotes is that if the tangent at any point P on the curve intersects them at Q and R, the area of the triangle CQR is constant and equal to ab , where a is equal to CA or CA' and $b^2 = a^2(e^2 - 1)$, e being the eccentricity = CA/CX. In analytical conics the equation of the H. is $x^2/a^2 - y^2/b^2 = 1$, referred to rectangular axes through C, or $xy = (a^2 + b^2)/4$, referred to its asymptotes. If the asymptotes are at right angles to one another the H. is called *rectangular* or,

since $a = b$ in this case, it is also known as an *equilateral H.*

Hyperbole (Gk *hyper*, above; *ballein*, to throw) is the use of exaggeration to give a rhetorical effect, as in Lady Macbeth's 'All the perfumes of Arabia will not sweeten this little hand,' or more colloquially, from Dickens, 'Oceans of room, Copperfield!' See also **FIGURE OF SPEECH**.

Hyperbolic Functions, name given to a set of 6 functions which are closely connected with the 6 trigonometrical ratios. The hyperbolic *sine* is written \sinh , and may be defined by $\sinh \theta = \frac{e^\theta - e^{-\theta}}{2}$.

Similarly the hyperbolic *cosine* is given by $\cosh \theta = \frac{e^\theta + e^{-\theta}}{2}$. The remaining 4

are obtained from the equations, $\tanh \theta = \frac{\sinh \theta}{\cosh \theta}$, $\coth \theta = \frac{\cosh \theta}{\sinh \theta}$, $\operatorname{sech} \theta = \frac{1}{\cosh \theta}$, and $\operatorname{cosech} \theta = \frac{1}{\sinh \theta}$. Since $\sinh = \frac{e^\theta - e^{-\theta}}{2}$ and $\cosh = \frac{e^\theta + e^{-\theta}}{2}$, where

$\epsilon = \sqrt{-1}$, $\therefore \frac{\sinh \theta}{\cosh \theta} = \frac{e^\theta - e^{-\theta}}{e^\theta + e^{-\theta}} = \tanh \theta$

and $\cos \theta = \frac{e^{i\theta} + e^{-i\theta}}{2} = \cosh \theta$, and thus

the connection with the trigonometrical ratios may be estab. A series of formulae parallel with the ordinary trigonometrical formulae can be deduced, e.g.:

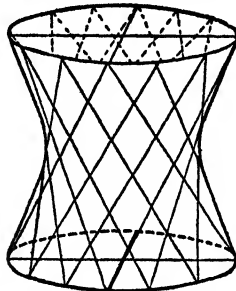
$\cosh \theta - \sinh \theta = 1$, $\sinh(\theta + \phi) = \sinh \theta \cosh \phi + \cosh \theta \sinh \phi$, $\sinh 2\theta = 2 \sinh \theta \cosh \theta$, $\cosh 2\theta = \cosh^2 \theta + \sinh^2 \theta$, etc. See **TRIGONOMETRY**.

Hyperboloid, name given in solid geometry to 2 surfaces belonging to the general class of conicoids, which in 3-dimensional analytical geometry are represented by equations of the second degree in x, y , and z . The 2 forms of H.s are known as the H. of 1 sheet (shown in the figure) and the H. of 2 sheets. The simplest forms of their equations are respectively

$\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$ and $\frac{x^2}{a^2} - \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$.

The H. of 1 sheet is generated by a variable ellipse which moves parallel to itself, and has its vertices on 2 hyperbolas whose planes are perpendicular to each other and to the plane of the moving ellipse, and which have a common conjugate axis. The H. of 2 sheets is generated in the same way except that the hyperbolas have a common *transverse* axis. Both are intersected by 3 mutually perpendicular planes in 2 hyperbolas and 1 ellipse. The H. of 2 sheets is formed by 2 distinct surfaces extending to infinity, and each is touched at infinity by an asymptotic cone, in the same way as the hyperbola has 2 branches and a pair of asymptotes. The H. of 1 sheet is a ruled surface, and is such that through every point of it 2 straight lines, called generators, may be drawn so as to lie wholly on

the surface. It may also be defined as the locus of the intersection of corresponding planes of 2 homographic pencils of planes. See **GEOMETRY**, *Solid Geometry*.



Hyperborean Mountains, anc. name of Ural Mts (q.v.).

Hyperborei (Gk 'beyond the north wind'), a mythical race of the far N. who enjoyed perpetual youth, constant sunshine, and unclouded happiness. The Rhipacian Mts separated them from the rest of the world. The name was afterwards used of any remote northerners. See Pindar, *Pyth.*, x. 502; Herod. iv. 32-35; C. Crusius, 'Hyperboreer' (W. Roscher, *Lexikon*), 1884-97.

Hyperchlorhydria, the presence of an abnormal amount of hydrochloric acid in the gastric secretion.

Hyperides (389-322 BC), a celebrated Athenian orator, one of the 10 of the Alexandrian canon, ranking next to Demosthenes. After studying under Plato and Isocrates, he became an advocate at Athens. H. warmly supported the Athenian opposition to Macedon headed by Demosthenes and Lycurgus, and was a staunch friend of the former until they fell out over the case of Alexander's absconding treasurer, Harpalus. In the Lamian War that followed, H. shared in the defeat at Crannon (322), and was captured and killed by Antipater at Aegina. His writings are witty, graceful, and ironical, the best known being the funeral oration over the dead in the Lamian War. See eds. of speeches and fragments by C. Babington, 1853, and F. Blass, 1894; Sir F. Kenyon (ed.), *Against Athenogenes*, and *Against Philpides*, 1893, and Oxford Text, 1907; also J. F. Dobson, *The Greek Orators*, 1919.

Hyperion, a Titan, son of Uranus and Gaia (Heaven and Earth), father of Helios, Selene, and Eos (Sun, Moon, and Dawn). The name is also used for the sun-god himself, and so acquired the connotation of beauty.

Hyperite, name which has been given to igneous rocks allied to diabase and containing plagioclase, iron ores, biotite, hypersthene, etc.

Hypermetra, the one daughter of Danaus (q.v.) who spared her husband (Lynceus).

Hypermetropia, condition of long sight, caused when the cornea is too flattened or the eyeball too short; as a result rays of light, instead of converging to a focus on the retina, are brought to a focus behind the retina. H. is corrected by the use of spectacles with convex lenses. See **under REFRACTION, ERRORS OF**.

Hyperons are particles with a mass between 1 and 2 times that of the proton (q.v.). The first examples were discovered in 1947 by various workers during cosmic ray studies using nuclear emulsions and Wilson cloud chambers (qq.v.). During the last few years sev. more such

Hypersthene, rock-forming mineral consisting of silicates of iron and magnesium; formula $(Fe, Mg)_2Si_2O_6$. It belongs to the pyroxene group of metasilicates, and possesses more iron than the rest of the orthorhombic series of pyroxenes.

Hypersthene, crystalline rock whose chief constituent is hypersthene (q.v.). It is a member of the pyroxenite group, and different species are named according to the other minerals present.

Hyperthyroidism, or **Thyrotoxicosis**, or **Graves's Disease**, a condition of abnormal overactivity of the thyroid gland and excessive secretion of thyroxin. It is

Symbol	Mass (m_e)	Mean Life (sec.)	Decay products	Energy (MeV)
Λ^0	2181	2.7×10^{-10}	$p + \pi^-$	35
Σ^0	2324	?	$\Lambda^0 + \gamma$?
Σ^+	2327	0.7×10^{-10}	$n + \pi^+$ or $p + \pi^0$	106 116
Σ^-	2341	1.4×10^{-10}	$n + \pi^-$	118
Ξ^0	?	?	$\Lambda^0 + \pi^0$?
Ξ^-	2585	$ca. 10^{-11} - 10^{-9}$	$\Lambda^0 + \pi^-$	ca. 65

Notes: The superscript \pm or 0 indicates the charge on the particle. The mass is given in multiples of that of the electron (m_e), on which scale the mass of the proton is about 1837 units. In the decay products the symbol π refers to a pi-meson (see **MESONS**), and γ refers to a gamma ray photon. The energy shared by the decay products is given in MeV (see **ELECTRON VOLT**).

particles have been discovered, and they have also been produced artificially by bombarding nuclei with protons accelerated to very high energies by the synchrotron (q.v.). The existence of the H. in the table above is now well estab. and it is quite possible that more will be discovered. These particles play an important part in theoretical and experimental studies of the nucleus (q.v.). See **MESONS; COSMIC RADIATION; RADIOACTIVITY**. See C. F. Powell, *Tracks in Cosmic Ray Emulsions*, 1958; *Progress in Cosmic Ray Physics*, pub. annually.

Hyperplasia (Gk *hyper*, over; *plasis*, formation), enlargement of tissue or organ due to an increase in the number of its cells. H. is to be distinguished from hypertrophy (q.v.) in which there is no increase in the number of cells, but only in their size. Growth is an example of normal H., while a tumour is an example of abnormal H.

Hyperpyrexia, see **FEVER**.

E.E. 6—2

associated with primary and secondary toxic exophthalmic goitre (q.v.), but severe thyrotoxicosis may also exist without any apparent or actual enlargement of the thyroid gland. The sufferer from typical Graves's disease complains of sweating, anxiety, irritability and emotional instability, restlessness and palpitations. There are usually signs of protrusion of the eyeballs, a rapid pulse, and a tremor of the fingers. In atypical cases one or more of these symptoms or signs only may be present and the diagnosis is not readily apparent. For instance, cardiac irregularity may be the first and only sign. H. is more common in females than in males and as nervous shock or an emotional upset is frequently a causative factor its onset often occurs at puberty or at the menopause. For treatment see **GOITRE**. The opposite to hyperthyroidism is hypothyroidism (see **MYXOEDEMA**).

Hypertrophy (Gk *hyper*, over; *trophé*,

nutrition), increase in size of tissue or organ due to enlargement of its cells. Thus a hypertrophied organ increases in size because its individual cells or fibres increase in size. *H.* occurs from over use and over activity. In these circumstances the blood supply to the part increases, bringing increased nourishment. Muscles hypertrophy with exercise. Heart muscles hypertrophy when constantly called upon to do extra work, as in athletes or in pathological conditions such as high blood pressure or aortic stenosis (see **HEART**), which cause the heart to work harder in order to propel the blood through the circulatory system. The stomach muscle (q.v.) hypertrophies from overwork if there is any tendency to obstruction at the pyloric outlet. Goitre (q.v.) is another example of *H.* In disease or absence of one organ, its opposite number hypertrophies from extra work. Thus, if one kidney is removed the other hypertrophies. The opposite to *H.* is atrophy (q.v.).

Hypnerotomachia, allegorical work written by the It. Dominican Francesco Colonna (q.v.) under the pseudonym 'Poliphilus,' and in macaronic Lat. It deals with a variety of subjects, but is chiefly remarkable for its architectural theory. Written probably before 1479, it was pub. at Venice 20 years later and is generally accepted as Aldo's typographical masterpiece. There is an Eng. trans. by Sir Robert Dallington, 1592, ed. by Andrew Lang, 1890.

Hypnoanalysis, see **HYPNOTISM**.

Hypnone, hypnotic or soporific drug known in chem. as acetophenone. Its formula is $\text{CH}_3\cdot\text{CO}\cdot\text{C}_6\text{H}_5$. *H.* is a colourless crystalline solid, melting point 20°C . It is made by the action of acetyl chloride upon benzene in the presence of anhydrous aluminium chloride.

Hypnos, see **SOMNUS**.

Hypnotics, group of drugs which induce sleep and act by depressing the sensory functions of the brain and the reflex activity of the spinal cord. They have no effect on pain sensation and in this respect differ from the narcotics of the opium series (see also **OPIMUM**). A large number of structurally dissimilar synthetic drugs comprise the pharmacological group of *H.* They have been classified into: (1) *halogen derivatives*, chloral hydrate and chlorbutol; (2) *aldehydes*, paraldehyde; (3) *sulphone-melhanes*, sulphonal, trional, tetrional; (4) *carbomates*, urethane, hedonal; (5) *urea derivatives*, barbitalone (q.v.) and various barbiturates (q.v.); (6) *alcohols*, amylene hydrate. Sufficient quantities of all these drugs will produce complete anaesthesia of a dangerous nature, lasting for even 3 or 4 days. The stages through which the patient passes are: (1) drowsiness and light sleep with impairment of coordination; (2) depressing of reflexes, but patient can be roused; (3) loss of consciousness; (4) complete surgical anaesthesia with loss of corneal reflex.

Chloral hydrate ($\text{CCl}_3\text{CH}(\text{OH})_2$) has a pungent odour and bitter taste. It is

easily melted by gentle heat and is soluble in water. The dose if 5 to 30 gr. (0.3-2 g.). It is quickly absorbed in the stomach and is a powerful hypnotic acting directly on the brain. After a moderate dose sleep lasts sev. hrs and there are few after-effects on waking. Large doses produce coma, and poisonous doses cause death from paralysis of the respiratory centre. Medicinally, it is especially useful in simple insomnia from overwork or worry. **Paraldehyde** ($\text{C}_6\text{H}_{12}\text{O}_6$), is a colourless liquid with an unpleasant, pungent odour somewhat like garlic. By mouth the dose is 30 to 120 min. (2 to 3 ml.). By rectum $\frac{1}{2}$ to 1 fluid oz (15 to 30 ml.). It is a powerful hypnotic, operating quickly and producing refreshing sleep with few after-effects on waking. In poisonous doses it may cause death from respiratory failure. It is used extensively in cases of delirium, mania, and melancholia. **Sulphonal** ($\text{C}_8\text{H}_8\text{S}_2\text{O}_4$), colourless crystals, almost tasteless. The dose is 5 to 20 gr. (0.3 to 1.2 g.). It is insoluble and therefore very slow acting. It may have a cumulative action if taken over a period. It is a direct cerebral depressant and hypnotic, but owing to its disadvantages is seldom used. **Urethane** ($\text{NH}_2\text{COOC}_2\text{H}_5$), colourless, odourless crystals, soluble in water. It has a variable and weak hypnotic action and it is therefore little used for that purpose medicinally. It has been used in the treatment of leukaemia (q.v.) with some success. **Barbiturates** are described in the articles under that heading. **Amylene hydrate** ($\text{C}_6\text{H}_{12}\text{O}$) is a colourless liquid with a strong odour resembling camphor. The dose is 30 to 60 min. (2 to 4 ml.) and it is given in capsules. It has a more powerful hypnotic action than paraldehyde but less than that of chloral, and differs from both these in that it first stimulates the central nervous system before depressing it.

Hypnotism, condition of artificially induced sleep, or trance resembling sleep, in which a patient is rendered more susceptible to suggestion. It includes the series of phenomena which from time to time have been termed animal magnetism, mesmerism, induced somnambulism, odyllic force, etc.

History.—From time immemorial forms of *H.* appear to have been known, e.g. certain states of ecstasy which are more or less self-induced in types of fanatics are related to *H.*, and while affected, the individuals appear capable of resisting what would be pain and fatigue under normal circumstances. Definite investigations of the state have been made since the 16th cent.: Paracelsus at the end of that century estab. to his own satisfaction the existence of a sympathetic system between the human and the stars and other objects. Gassner, a Rom. Catholic priest of Swabia, in the middle of the 18th cent. stated that disease was due to demoniacal possession, and that a supernatural power, with which he claimed to be invested, could be used to expel all forms of disease. In 1774 Mesmer, a

Viennese physician, gained a large measure of success in the treatment of certain disorders. He proceeded to Paris in 1778, and by continued successes he gained a large following, and his suggestion of the actual transference of a 'magnetic fluid' continued in vogue until within quite recent times. His treatment necessitated much apparatus, magnets, connecting wires, etc., with usually a central tub of water or other liquid round which the patients were seated. A pupil, Marquis de Puységur, in 1780, proved that the accessory magnets, etc., were unnecessary, and the claims of 'mesmerism' became so insistent that a Fr. commission was appointed in 1785 to investigate the matter fully. Their report was unfavourable, and this, coupled with its later association with the notorious Cagliostro, brought it into disrepute. In 1831 Bertrand estab. the affinity of magnetic sleep to somnambulism, and suggested its use as a therapeutic agency, and a second Fr. commission of that year reported rather more favourably. In 1841 Dr Braid, a Manchester physician, discovered that a subject could be entranced by gazing at a bright object, and he suggested the name 'hypnotism,' from *Gk hypnos* sleep. On the Continent, schools of H. were estab. under the direction of the distinguished physiologist, Richet of France, and such physicians as Charcot (Salpêtrière), Liebault, Bernheim, Preyer, and Heidenhain. In Britain Dr Elliotson (editor of *Zoist*) supported H., and his advocacy resulted in his being driven out of the profession. But the discovery of chloroform in 1848 meant the possession of an anaesthetic of wider application and more certain results, and, in consequence, H. tended to become neglected. In 1882 Gurney carried out investigations in the subject, and the Brit. Medical Association, after a long period of doubt and vacillation, reported favourably on its use in 1892. The names of Drs Bramwell and Tuckey are associated with valuable work, and in 1907 the Medical Society for the Study of Suggestive Therapeutics was founded.

Methods.—The usual methods employed to bring about the hypnotic condition are either (a) peripheral, as in the gazing at a bright object so placed as to cause some slight muscular eye strain, flashing of mirrors, slow, monotonous 'mesmeric' passes, and even the ticking of a watch in very sensitive persons; (b) central stimulations as by verbal suggestions. Frequently there is a combination of these methods (Braid and Bernheim) as when the operator places a bright object slightly above the level of the subject's eye, and suggests to him the idea of sleep, at the same time making hand passes before the face. It is found in practice that about 90 per cent of persons are susceptible to H., and the proportion always appears to be higher in individuals trained to obey, e.g. soldiers, sailors, school children, etc., than in others, though it bears little relation to age, sex, or intelli-

gence. Liebault had some 1700 successes in 1756 persons treated. Bramwell had but 2 failures in his first 500 subjects, and no less than 240 became somnambules. The persons who give exhibitions of H. on the stage are in reality not specially gifted: it is quite possible for a psychiatrist to induce equally profound hypnosis, but lighter stages are more suitable for purposes of healing. Many animals, e.g. cats, dogs, lizards, crocodiles, etc., can be hypnotised.

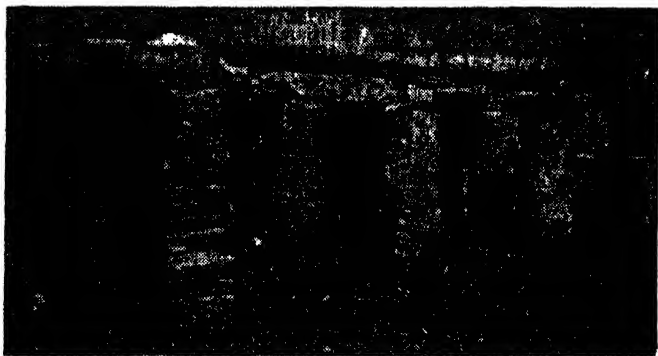
Symptoms.—There are 3 well-marked stages of hypnosis: (1) slight, in which the voluntary muscles are affected, without loss of consciousness in the patient and without amnesia on returning to the normal condition; (2) deep, in which the symptoms vary greatly; the sensory system is affected, there may be tonic contractures of the muscles (induced catalepsy of Heidenhain), or marked flexibility; there is frequently an increase of muscular strength, or a maintenance of an awkward attitude without muscular fatigue; there may be paralysis of one side, or one organ, by open or overt suggestion, or suggestion may be used to cause alterations of sensation. Visible symptoms include: change in pulse beat and in rate of respiration, dilated pupils, drooped eyelids, protruding eyeballs, and frequently flushed face and highly increased perspiration. This stage is usually marked by amnesia on waking, though a second hypnotic state will generally contain memories of the first. No satisfactory explanation has been given of post-hypnotic suggestion by which the subject can be made to carry out some action (not foreign to his nature) after the lapse of a given interval, as for example, the hypnotised person may be told to write his name, note the time, purchase some article, etc., after the expiration of, say, 5000 min., and although on waking he may have no cognition of the command, yet punctually to time he will endeavour to carry out the suggestion, usually doing so with some more or less plausible explanation. The third stage is somnambulism, in which the subject rarely makes any response to suggestions; this condition can seldom be reached during the first experiments with a new subject.

Uses.—Although H. is extensively used, yet the treatment does not fulfil all the claims of its early exponents. There is no doubt that H. can be made to yield sleep without the use of drugs, which of itself is a valuable property, and during this sleep the subject is peculiarly open to suggestion, so that definite advantage follows its use in cases of blindness, loss of speech, hysterical paralysis, etc. Pain can be relieved, e.g. during childbirth or surgical operations (see above). Its use has been suggested as an educational agent even, on the Continent, for the reformation of criminals, as it has been claimed that considerable improvements have followed its application in dipsomania, morphinomania, etc. It is sometimes possible by H. to produce

alterations in unconscious attitudes underlying psychological symptoms (with disappearance of the symptoms) and mental analysis may often be expedited by the use of H. (Hypnoanalysis). Exaggerated statements have been circulated as to the extent of control consequent on H., and experiments show that it is extremely difficult, in many cases impossible, to induce an individual to carry out actions which are normally abhorrent to his character, i.e. H. cannot make a normal individual carry out a criminal campaign, though an unbalanced or pernicious mind may be rendered criminal.

Theories.—Numerous theories have been advanced but the nature of the H. state is still uncertain. It has been con-

Hypochlorous Acid (HClO) is only known in aqueous solution, and may be obtained by distilling bleaching powder with dilute nitric acid, or by dissolving chlorine monoxide in water. The solution obtained has a peculiar 'chlorous' smell, and strong bleaching properties, the H. A. being read hydrochloric acid and oxygen. The hypochlorites, are almost unknown in the pure state, and are obtained, together with the chlorides, when chlorine is passed into a cold solution of the hydroxide of an alkali or alkaline earth. Bleaching powder (q.v.), or 'chloride of lime,' is prepared by passing chlorine over moist slaked lime, and consists of a mixture of calcium hypochlorite, $\text{Ca}(\text{OCl})_2$, with basic calcium



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sidered (amongst other theories) to be (1) an abnormal state of the brain; (2) due to a temporary abolition of some cortical functions; (3) a psychoneurosis, allied to hysteria; (4) due to the estab. of a special rapport between hypnotist and subject; and (5) due to the estab. of conditioned reflexes. See A. Forl, *Hypnotismus*, 1906; E. L. Ash, *ABC of Medical Hypnosis*, 1931; Brenman and Gill, *Hypnotherapy*, 1944; A. Salter, *What is Hypnosis?* 1944; L. J. Katnosh and E. M. Zucker, *Handbook of Psychiatry*, 1945. See MESMER, F. A.

Hypo, popular name for the chemical substance used in 'fixing' photographic materials; commonly known as hypo-sulphite of soda, the correct name is thio-sulphate of soda ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$).

Hypocaust (literally room or place heated from below), arrangement of chambers below the floor used by the Romans for heating baths and houses. Hot air from the furnace (*hypocaustis*) was accumulated under the floor of the warm room (*calidarium*) and conveyed through the walls by means of pipes and passages (*cuniculi*) thence to be released into various rooms. The pipes also acted as radiators.

chloride, CaCl_2 , $\text{Ca}(\text{OH})_2 \cdot \text{H}_2\text{O}$ —roughly equivalent to $\text{Ca}(\text{OCl})\text{Cl}$. It is used in large quantities for bleaching in the textile trade. With small quantities of acid, H. A. is set free from hypo-chlorites, and with larger quantities chlorine is evolved. *Eau de Javelle*, formerly much used for bleaching, consists of a solution of potassium chloride, KCl , and potassium hypochlorite, KClO .

Hypochondriasis, state of mental depression caused by anxiety over health and the patient's belief that he is suffering from some organic disease.

Hypogeum, underground chamber anciently used as a burial place, storage room, or dwelling place. In archaeology the term is restricted to the first of these. Various types are found: dug from the earth; cut from rock, as were the Rom. catacombs; or constructed of masonry, as at Mycenae. The corresponding Lat. word is *conditorium*, which denotes a tomb to receive an inhumed body as opposed to cremation ashes.

Hyponitrous Acid ($\text{H}_2\text{N}_2\text{O}_2$), colourless crystalline substance, soluble in water, readily decomposing (often explosively) into nitrous oxide and water. Its hyponitrites, are formed by

of the nitrites by means of sodium amalgam. The silver salt is a yellow insoluble substance.

Hypophosphorous Acid (H_3PO_3), colourless crystalline compound, melting point $27^\circ C$, formed by the action of sulphuric acid on the barium salt, which is obtained by boiling phosphorus with a solution of baryta. On heating strongly, H. A. is decomposed into orthophosphoric acid and gaseous phosphoretted hydrogen. It is a powerful reducing agent, precipitating gold, silver, and mercury in the metallic state, and copper in the form of its hydride, from solutions of their salts. The hypophosphites are largely used in medicine as tonics.

Hypophyll, see BRACT.

Hypostasis (Gk *hypostasis*, subsistence), term meaning substantial existence, much used in the Trinitarian controversies of the 4th and 6th cents. At first used as equivalent to *ousia* (divine essence), its meaning in theology has changed considerably. It was regarded as synonymous with *prosōpon* or *persona* (person) at the council of Alexandria, AD 362, and is used to denote the distinct personal existence of each Person in the Trinity. The Hypostatic Union is the union of the divine and human natures in the single divine Person of Christ. See G. P. Fisher, *History of Christian Doctrine*, 1896; C. G. Harnack, *The History of Dogma*, iv, 1898.

Hypostyle Hall, a large hall of which the flat roof rests upon rows of columns, e.g. at the temple at Karnak in Egypt.

Hyposulphite of Soda, see HYPO, but correct name is sodium thiosulphate.

Hyposulphuric Acid, obtained by dissolving zinc in a solution of acid sodium sulphite. It is a strong bleaching agent.

Hypothes, in Scots law, a security over any part of a debtor's property, the property being allowed to remain in the possession of the debtor; hence distinct from both a mortgage and a pledge. The idea is borrowed directly from civil law (q.v.), but in practice Scots law allows of few H.s. H.s. are either implied (legal H.s.) or based upon express contract (conventional H.s.). The latter class is restricted to bottomry (q.v.) and respondentia (q.v.) bonds. The former includes the H.s. of: (a) A landlord over movables (*invecta et illata*) brought on to the leased premises, for one year's rent (but not for arrears). This does not apply to agric. land over 2 ac. or to certain house property, and some goods are not subject to landlord's H. (b) A feudal superior for his feu-duty. (c) A law agent over his client's writs and title deeds, for his expenses (properly a lien); and (d) Seamen, who have a tacit H. over the ship, and the freight due to the shipowner, for their wages; of a shipowner over the cargo for freight due, and of cargo-owners over the ship for loss by improper stowage. Generally speaking, the creditor enforces his security by getting the subject of the H. assigned to him. See Abbot, *Shipping*, 14th ed.; Gloag and Irvine, *Rights in Security*.

Hypothermia, see MEDICAL RESEARCH.

Hypothesis (Gk for foundation), in general, a supposition, proposition, or principle assumed as true for the purpose of argument, in order to draw conclusions or inferences, for proof of some point in question, or to account for some occurrence. In science the H. is a conjecture or tentative theory adopted provisionally as a guide in investigating phenomena. If this conjecture is found after careful tests and examination entirely satisfactory in explaining the phenomena in accordance with known facts and principles, it is accepted as a scientific theory. See E. Naville, *La logique de l'hypothèse*, 1880; Logic text-books by W. Jevons, B. Bosanquet, H. W. Joseph, W. Jevons, *Principles of Science*, 1874; H. Poincaré, *La Science et l'hypothèse*, 1902 (trans. 1905).

Hypsellanti, see YPSILANTI.

Hypsipyle, of Lemnos, saved her father, Thoas, when the women of the is. slew all the men. When the Argonauts landed and united with the Lemnian women, H. bore Jason twin sons. Driven from Lemnos when her father's escape was discovered, she became the nurse of Opheltes, son of King Lycurgus of Arcadia. While directing the heroes of the siege of Thebes to a spring in the Nemean forest, she left the child, who was killed by a serpent. The funeral games instituted for Opheltes were the reputed origin of the Nemean games.

Hypsometer, literally, any instrument for measuring height, but in meteorology the term is now applied exclusively to an instrument which determines height by reference to the boiling-point of water. The boiling-point of water decreases with decreasing atmospheric pressure, and hence with increasing height. The relation between pressure and height is determined by the hydrostatic equation of physics (see BAROMETER). The method requires very accurate thermometers, and to find a height with an error not exceeding 10 ft means that the boiling-point must be measured to within one-hundredth of a degree centigrade.

Hyracotherium, name of an extinct ungulate mammal belonging to the order Perissodactyla and considered to be an ancestor of the horse. It occurs in Eocene strata in Europe and is similar to the Amer. *Eohippus* or 'dawn-horse.' It was a small animal 3 ft or so in length, with complete dentition, 4 digits on the forelimbs and 3 on the hindlimbs, and orbits not enclosed by bone.

Hyrax, generic name of certain small species of mammals forming the order Hyracoidea; *Procavia* is an alternative term. These animals are popularly known as coney, and somewhat resemble rodents in appearance, owing to the long, curved, front teeth, adapted for gnawing, the short ears, and reduced tail; in the structure of the molar teeth, however, they are nearer the ungulates. Their bodies are covered with short, close fur, uniformly coloured, and the sharply-pointed snout is split; the digits are furnished with nails, with the exception of the middle toe of each hind-foot, which

has a long, curved claw. *H. syriaca*, the coney of the Bible, ranges over Syria, Palestine, and Arabia; it is of a dull yellow or fawn colour, with a small oval spot on the back; it is noted for its wariness and cannot be caught in traps; the nest is of dried grass and fur, in which the young are buried like those of a mouse. *H. capensis*, the rock-rabbit, daman, or klip-das, is confined to Cape Province and Natal.

Hyrcania, anot dist. of Persia, S. and SE. of the Caspian (*Hyrcanum Mare*), bordered by Parthia on the ESE. It corresponded roughly to the modern Gorgan and Mazandaran.

Hyrcanus, name of 2 Jewish high-priests and princes of the Hasmonean family: (1) *John (Johanan) Hyrcanus I* (c. 175-104 BC), son of Simon Maccabaeus, early won fame as a general against the Syrians under Cendebeaus. He became high-priest and governor of Judea (135), and founded the Jewish monarchy, which continued in his family until Herod seized Judea. There was much warfare during his reign. At first a Pharisee, he later joined the ranks of the Sadducees. (2) *Hyrcanus II*, grandson of above, high-priest (c. 79-40 BC). His brother Aristobulus disputed the throne with him till his death (49 BC). Antipater and later Pompey (63) supported H. as a less formidable foe, and Judea lost her independence. In 40 H. was captured by the Parthians, and lived in Babylonia till invited back by Herod (36), who had him executed on a charge of treason (30).

Hyssop, or *Hyssopus officinalis*, species of Labiatae, is a native of Europe, Asia,

Origanum maru, which is found plentifully in Palestine. The twigs formed into a bunch were used as a sprinkler (Exod. xii. 22).

Hystaspes, father of Darius I (522-486 BC), and a member of the royal house of the Achaemenidae. He was governor or satrap of Parthia and Hyrcania under Cambyses (d. 521) and Darius. Among the followers of Zoroaster was a prince, named H., who is thought by some authorities to be Darius's father.

Hysteria. That form of neurotic illness in which organic disease is simulated for the sake of some gain which the illness brings in solving some problem, fulfilling some wish or satisfying some desire, either in reality or in phantasy. The symptoms of almost any organic disease may be imitated, but rarely with complete accuracy since the symptoms are psychogenic (i.e. arise in the mind) and few patients have sufficient medical knowledge to reproduce symptoms of an organic illness with fidelity. For example, hysterical loss of skin sensation is often confined to the 'glove and stocking' area, a distribution which does not correspond to the anatomical arrangement of cutaneous nerves. As medical knowledge spreads, the grosser hysterical manifestations such as fits, widespread paralyses, etc., grow less frequent, and less definite complaints such as headaches and dizziness are more frequently encountered. Loss of memory is often hysterical and patients may wander from home in trance-like states. The patient is never clearly aware of the motive underlying his illness, but the extent of the self-deception varies and all transitions between hysterical reactions and malingering occur.

Hysterical reactions are more common in women than in men and often occur at puberty and in adolescence. They may follow accidents, particularly where there is a question of compensation and where the underlying motive, unrecognised by the patient, is financial gain. Since the symptoms are psychogenic, treatment is by psychotherapy, which may be given in various ways. Individual hysterical symptoms can often be removed by suggestion (often effectively given with the help of hypnosis) but unless the underlying psychological problems are tackled, or the environmental stress diminishes similar or different symptoms are likely to recur. It may be necessary to alter a patient's environment, as for example by arranging for a child to go to a residential school, away from over-solicitous and fussy parents. Hysterical symptoms may clear up spontaneously when the patient's problems are solved, e.g. by the satisfactory settlement of a claim for compensation. In many cases manipulation of the environment is not enough, and a thorough investigation of the patient's life becomes necessary with the aim of helping him to understand and solve the conflicts or problems for which his hysterical symptoms are an unsatisfactory solution. See also HYPNOTISM; PSYCHIATRY; PSYCHOANALYSIS. See D.



HYSSOP

and the Mediterranean shores. It is a hardy plant, with stems which are shrubby near the ground but herbaceous above. The flowers are blue and were formerly used in medicine when dried; the leaves are oblong and sessile, and are used in salads and in the manuf. of absinthe; the whole plant is bitter and aromatic. The herb intended in scriptural writings is probably a species of Marjoram, the

K. Henderson and R. D. Gillespie, *A Textbook of Psychiatry*, 7th ed. 1950.

The term 'Hysterics' is not synonymous with H., but is a general term for uncontrolled emotional outbursts, often with screaming, sobbing, laughing, struggling, etc. Persons who have such outbursts may or may not be hysterical in the technical meaning described above.

Hysterion Proteron (Gk *husteros*, latter; *proteros*, former) is a figure of speech by which an idea is placed first when it is actually last in point of time, as in Shelley's line, 'I die, I faint, I fail.' See also FIGURE OF SPEECH.

Hythe (A.-S. port, haven), seaside tn and resort of Kent, England, one of the Cinque Ports, on the SE. coast, 4½ m. W. of Folkestone. The par. church of St Leonard, partly late Norman, contains Salvata mosaics and a rare Armada treasure chest. The Army School of Infantry (formerly known as the School of Musketry and later as the Small Arms School) has been estab. here for over 100 years. The Royal Military Canal runs through the tn, cut as a defence against Napoleon's threatened invasion and now a peaceful waterway providing facilities for boating and fishing. Pop. 9218.

I, 9th letter of the Eng. alphabet called in Gk *iota* and in Semitic *yōdā*. In the North-Semitic alphabet and in early Greek it resembled a Z; later the symbol was straightened to i. In the Square Heb. script, the parent of the modern Heb. alphabet, the symbol came to be written with a very small sign, hence our words 'jot' (cf. Matt. v. 18) and 'jottings' = little notes. In early medieval Lat. *i* was first written with a dot for the sake of distinction from *m*, *u*, *o* another *i*. As to its phonetic value, *i* the Semitic alphabets, which were at first all consonantal scripts, it had the consonant value of *y*, as in 'yet,' but in Greek and in its descendants it had the vowel sound *i*. In Lat. it also denoted the consonant *j*, pronounced *y*, although in Eng. it received the value of *j* as in 'judge'; otherwise it had 3 sounds, the long or short *i* (*i*, *ī*), the former resembling the sound of *i* as in 'machine' and in the continental *i*, often written in Eng. *ee*, as in 'meet.' The O.E. short *i* has remained practically unchanged in sound, cf. O.E. *sittan*, New E. 'sit.' The O.E. long *i* (*ī*), which had the continental value *i* (remaining in 'machine'), was later diphthongised, and in 16th-cent. MSS. is often written *ei*; cf. O.E. *lif*, New E. 'life,' 'mine.' See ALPHABET.

Iacchus, solemn title of Bacchus (q.v.) in the Eleusinian mysteries. As son of Demeter he is usually distinguished from the older Dionysus, son of Semele. He was a divinity peculiar to Athens. See T. Dyer, *Gods in Greece*, 1891. See also ELEUSINIA.

Iadera, see ZADAR.

Iamblichus: 1. Or Jamblichus Chalcidensis, Gk philosopher of the Neoplatonic school (c. 250-c. 325), b. at Chalcis in Coele-Syria. In order to provide a detailed Pagan theology which might stand against Christianity, I. constructed a system from the Dialogues of Plato with a strong admixture of Oriental magic. His surviving works are as follows: *Protrepticus* (passages from earlier philosophers), ed. H. Pistelli, 1888; *De Vita Pythagorica*, ed. A. Nauck, 1884; *De Communi Mathematica Scientia*, ed. N. Festa, 1891; *In Nicomachi Arithmetice Introductionem*, ed. H. Pistelli, 1894; *De Mysteriis* (of doubtful authenticity), ed. G. Parthey, 1857; and *Theologumena Arithmeticae*, ed. de Falco, 1922. See T. Whittaker, *The Neoplatonists*, 2nd ed. 1923.

2. Syrian Gk writer of the 2nd cent. AD, who fl. under Trajan. He was author of *Babylonica*, describing the adventures of the lovers Rhodane and Sinonis. Photius gives an epitome of the romance which is itself not extant (see *Bibliotheca*, chapter xciv). See A. Chassang, *Histoire*

du Roman dans l'antiquité, 1862; T. Whittaker, *The Neo-Platonists*, 1901; M. de Wulf, *History of Medieval Philosophy* (trans. by E. C. Messenger), 1936.

Iambus, or **Iamb**, metrical foot consisting of a short syllable followed by a long one. The iambic trimeter, a verse of 6 ft, was the prin. metre of Gk drama. In Eng. poetry an iambic verse of 6 ft is termed an Alexandrine (q.v.). Iambic pentameter or 5-stressed line is known in Eng. as heroic verse or heroic couplet (q.v.) or blank verse (q.v.) according as it is rhymed or unrhymed. See also METRE.

Ianthina, the genus of purple-snails, pelagic gastropods which float at the surface of the warmer parts of the ocean and attach their eggs to a gelatinous air-filled, bubble float.

Iapetus, a Titan, son of Uranus and Gaia, father of Atlas and Prometheus, grandfather of Deucalion, and so regarded as the ancestor of the human race. He revolted against the new order under Zeus, and was imprisoned in Tartarus.

Iapetus, 8th satellite of Saturn, discovered by Cassini in 1671. It has the peculiarity of always appearing brighter when seen to the W. of the planet than when seen to the E., its stellar magnitude varying between 9 and 11.

Iapygia, in ancient geography, the name applied by the Greeks to Messapia or Apulia, S.E. Italy.

Iasi, see JASSY.

Ibadan, walled city of Yoruba country in S. Nigeria, West Africa, 83 m. NNE. of Lagos, said to be the largest native tn in Africa. There is a garrison stationed in I. I. is the centre of the cocoa industry and extremely prosperous. Much of the small trade is in the hands of Syrians and Lebanese. There is a 'sacred' crocodile in I. said to be over 100 years old, and which is confined in a miserable pit near the centre of the tn. A univ. college and medical school is estab. in I. I. is the cap. of the W. region. Pop. 459,000.

Ibagué, or **San Bonifacio de Ibagué**, cap. of Tolima dept., Colombia, 80 m. SW. of Bogotá, in a rich agric. dist. There are warm springs and sulphur and silver mines near. Guataquito, in the Magdalena, is its port. It has a rail connection with Girardot as well as Bogotá, and lines are under construction between I. and Armenia and Buenaventura. There is an airport. Pop. 28,000.

Ibajay, tn on the N. coast of Panay Is., Philippines, in Capiz prov. It grows rice and tobacco. Pop. 24,088.

Ibañez, **Vicente Blasco** (1867-1928), Sp. novelist and politician, b. Valencia. An ardent revolutionary reformer and political agitator, he suffered exile and imprisonment for his views, but was nevertheless returned sev. times to the Sp.

Parliament. At one time he founded, and for 5 years managed, a South Amer. colony. The latter part of his life he spent in Paris, the centre of a revolutionary and anti-Royalist group.

His earlier novels are by many considered his best—*Arroz y Tartana*, 1894, *Flor de Mayo*, 1895, *La Barraca*, 1898, *Cafas y Barro*, 1902, and *Entre Naranjos*, 1902. They are realistic in treatment, and describe life in the tns, farms, and fishing vils. of Valencia; they are full of life, colour, and brute force. His next group of novels—*La Catedral*, 1903 (trans. 1909), *El Intruso*, 1904, *La Bodega*, 1905, and *La Horda*, 1905—are political and sociological. In his third group—*Sangre y Arena*, 1908, *Los Muertos Mandan*, 1909, and *Luna Benamor*—he returns once more to his original style, but does not describe the same locality. Many of his novels were trans. into Eng. His *Four Horsemen of the Apocalypse*, 1916, was an immense success abroad, both as a novel and as a film. His later books were *Marc Nostrum*, 1918, *La Tierra de Todos*, 1922, and *A Novelist's Tour of the World*, 1927. See C. Pitoulet, *Vicente Blasco Ibañez, ses romans et le roman de sa vie*, 1921; J. A. Balseiro, *V. Blasco Ibañez, hombre de acción y de letras*, 1935.

Ibarra, cap. of Imbabura prov., Ecuador, about 50 m. NNE. of Quito. Founded in 1606, it was almost destroyed by earthquake in 1868. It is a bishop's see, and has woollen and cotton mills, and produces native silver- and wood-work. It stands at the N. foot of Imbabura volcano. A railway connects I. with Quito. Altitude 7300 ft. Pop. about 7000.

Ibbetson, Julius Caesar (1759-1817), painter. b. Churwell Bank, Yorks. Though not of the first rank, he produced a few works of charm, and individuality, as in 'The Ascent of George Biggin in Lunardi's Balloon.' He painted mainly Eng. landscapes with figures and was a skilled animal painter.

Ibea, see KENYA COLONY AND PROTECTORATE.

Iberia: 1. Gk name for Spain, probably derived from Iberus, the Ebro (q.v.).

2. Name by which E. Georgia in the Caucasus was known in anct times.

Iberian Sea, name given to the Mediterranean between Spain and the North African coast of Morocco.

Iberis, family Cruciferae, genus of some 40 ann. herbs or sub-shrubs, found in S. Europe and W. Asia. Alternate leaves, white or purple flowers, in racemes or corymbs with 4 sepals, and flat silique fruits. *I. amara* and *I. umbellata* are ann. Candytufts; *I. corneifolia*, *I. gibraltarica*, *I. saxatilis*, and *I. sempervirens*, evergreen sub-shrubs, grown in gardens.

Ibert, Jacques (1890-), Fr. composer, studied at the Paris Conservatoire, where he obtained the Prix de Rome in 1919. He lived in Paris after his statutory period of study at the Académie de France in Rome, and became its director in 1937.

His works include sev. operas, 2 of them, *L'Aiglon* (based on Rostand's play) and *La Famille Cardinal*, written in collaboration with Honegger; ballets; incidental, radio, and film music; choral and orchestral works; chamber music; piano pieces, etc.

Iberville, Pierre le Moynes, Sieur d' (1661-1706), Fr.-Canadian naval and military commander, b. at Montreal. He took part in the destruction of Schenectady (1690). In 1699 he founded Fort Biloxi (afterwards Mobile) at the mouth of the Mississippi in Biloxi Bay, and planted a Fr. colony there.



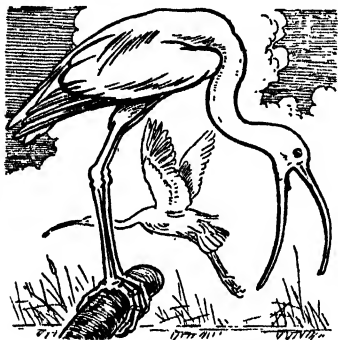
IBERIS (CANDYTUFT)

Ibex, name of sev. species of *Capra*, a genus of Bovidae, which includes the goats. The Alpine I., *Steinbok*, or bouquetin, was formerly abundant in Europe but it is now rare, and almost extinct through hunting. *C. ibex*, as it is technically called, is larger than common goats, with no beard, long, thick horns curving backwards, and brown hair. It lives on shrubs and lichens and such vegetation as it can obtain on the hill-sides, and leaps for extraordinary distances. From the milk butter and cheese are made, the hair is clipped and made into ropes, the horns are used for handles, and the skin is dressed and made into shoes and gloves. The I. is very destructive to vegetation and especially to vines, and on this account was freely offered in sacrifice to Bacchus. *C. pyrenaica*, Sp. 1., found in the mts of Spain and Portugal, is characterised by the short black beard and dark shoulder strap.

Ibicuy, port on Paraná R., Entre Ríos, N. Argentina, near the confluence of the Uruguay and Paraná. Cattle and corn are the main exports. Pop. 1000.

Ibis, generic name of sev. members of Threskiornithidae, wading birds related to the spoonbills. They have large bodies with long curved bills, rather blunt at the

end, with the upper mandible grooved, long necks and legs, and generally black and white plumage. The most famous species, *Threskiornis aethiops*, the sacred I., was formerly worshipped by the Egyptians. It always appeared in Egypt at the rise of the Nile, and was supposed to preserve the country from plagues and serpents. It could not live out of Egypt, and there it was zealously preserved in temples. Numerous mummified remains of I.s have been found at Thebes and Memphis, wrapped in linen in the ordinary way. I. (or *Eudocimus*) *alba*, the white I., is a pure white species found in Florida. I. (or *Eudocimus*) *ruber*, the scarlet I., an Amer. species, is brilliant scarlet with a



IBIS

few black patches. *Plegadis falcinellus*, an African species sometimes strays to Britain and North America.

Ibiza (anct *Ebusos*): 1. Third largest of the Balearic Isles (q.v.). Part of its coast is very rocky, but there are also fine beaches. It has a moderate climate and is extremely fertile. Figs, almonds, and sea-salts are produced in large quantities, and there are handicraft manufs. of souvenirs. Area 221 sq. m.

2. Sp. tn, cap. of the is. of I. It has an anct castle, a cathedral, and Phoenician remains. Pop. 12,100.

Iblis, see **EBILIS**.

Ibn-an-Nafis (d. 1289), Syrian physician, b. Damascus in the first half of the 13th cent. He practised medicine at Cairo, where he was the dean of the Mansuri Hospital. In 1286 he wrote a commentary on the anatomy of Avicenna's *Canon*, and in it described for the first time the lesser or pulmonary circulation (the circulation of the blood through the lungs for the purpose of oxygenation). This was 3 centuries before the work of Servetus (q.v.). The discovery was brought to light by Mohyi el Din el Tawfiq, who made it the subject of his inaugural dissertation, Freiburg, B. 1924. Arabic text and trans. by Max Meyerhof, *Quellen und Studien zur Geschichte der*

Medizin, 1933, vol. iv, pp. 37-88. See also A. A. Khairallah, *Arabic Contributions to Medicine*, 1946.

Ibn Bâjja, commonly known as **Avempace**, Arabic philosopher and poet, b. at Saragossa. He was sometime a physician at Seville; d. 1138. He followed Al-Farabi's interpretation of late Gk philosophy. His summaries of Aristotle have survived together with a number of small treatises upon a variety of subjects; but most of them have remained unpublished. See T. J. de Boer, *The History of Philosophy in Islam*, 1903.

Ibn Batûta, or **Abu Abdullah Mohammed** (1304-78), Arab traveller, b. Tangier. He traversed Persia, Mesopotamia, Arabia, East African coast, Asia Minor, the shores of the Caspian, Bokhara, Afghanistan, and India, China, Sumatra, and S. Spain. On his return he settled at Fez, and wrote a graphic account of his adventures, valuable for its shrewd, original observations. It was trans. into Eng. by S. Lee, 1829, and into Fr. by M. Deffrémery and Dr Sanguinetti, 1859. He d. at Fez, Morocco. See H. A. B. Gibb, *The Travels of Ibn Battûta*, 1929.

Ibn Ezra, see **ABENEZRA**.

Ibn Gabirol, **Solomon ben Judah**, commonly known as **Avicbron** (c. 1020-c. 1057), Heb. poet and philosopher, b. Malaga, Spain, d. at Valencia. As a poet he ranks as one of the greatest medieval writers, and some of his shorter works have been incorporated in the Jewish liturgy. His main philosophical work, written in Arabic, is fully preserved only in the Lat. trans. entitled *Fons Vitæ* made by Gondisalvi. Its thought is Neoplatonic with elements from Aristotle and Philo Judæus. This celebrated treatise influenced Duns Scotus and the Franciscans, Spinoza, Schopenhauer, and (in a Heb. trans.) the Kabbalah. It has no Jewish characteristics, and professes to have been written by 'Avicbron,' whose identity with I. G. was estab. in 1859 by S. Munk. There is an ed. of I. G.'s poems entitled *Diwan*, ed. by H. N. Bialik and Y. H. Ravnitzky, 3 vols., 1924-9. The *Fons Vitæ* has been ed. by C. Bamber, 2 vols., 1945.

Ibn Haukal, **Mohammed** (d. 976), Arabian geographer and traveller of the 10th cent., b. Bagdad. He pub. a *Book of Roads and Kingdoms*, containing an instructive account of Islamic lands, accompanied by a map. A MS. copy is in the Bodleian Library.

Ibn Khallikan **Abu'l Abbas Ahmed** (1211-82), Arabian historian and scholar, b. Arbela. He travelled in Syria and Egypt. He was deputy for the chief judge in Cairo, chief judge in Damascus, and finally prof. in colleges in Cairo. Like most scholars he wrote verse. His prin. work is a biographical dictionary, *Deaths of Eminent Men*.

Ibn-Rushd, see **AVERROES**.

Ibn Sa'ud, king of the Hejaz. See **SA'UD, ABDUL ASIZ IBN**.

Ibn Sina, see **AVICENNA**.

Ibn Tufayl, **Abu Bakr Mahommed ibn Abdul Malik** (d. 1185), Arabic philosopher,

b. at the beginning of the 12th cent., at Quadix in Spain. His chief work was a philosophical romance, *Hayy ibn Yaqzan*.

Ibn Zohar, see AVENZOAR.

Ibo, densely populated area of S. Nigeria. Also the name of the language spoken—a negro sudanic tongue. Among the Ibo-speaking

Ala, of the her shrines, and her priests, as guardians of morality and the public peace, have political and judicial functions. Other native tribes regard the I. people with some awe because of ritual murder, human sacrifice, and cannibalism, which it is believed are still practised. They are a very intelligent race with a reputation for treachery. Ceremonies connected with the attainment of puberty are specially revolting, as are many other customs. Ju-ju and witchcraft are rife. Pop. 9,444,000.

Ibrahim Pasha (1789–1848), Egyptian viceroy, said to have been adopted son of Mehemet Ali (q.v.), Pasha of Egypt. He reorganised the army on European plans, and helped the Turks against the Greeks. Mehemet Ali revolted against the sultan, and Ibrahim inflicted a severe defeat on the Ottoman army at Nezib. The European powers now interfered, and he had to retire before the Brit. troops, losing all he had gained. In 1848 he was appointed viceroy, but d. soon afterwards at Cairo.

Ibsambul, see ABU-SIMBEL.

Ibsen, Henrik (1828–1906), Norwegian playwright and poet, b. Skien. At 16 he became an apothecary's assistant, intending to study medicine. The effete puritanism and social prejudices of the Norwegian prov. life, in which his unhappy early years were passed, were rich material for the bitter satires on civilisation with which he subsequently stung Europe into fury. His earliest work, *Catilina*, 1850, was purely historical, and was inspired by his reading of Sallust and Cicero for the examination at Christiania Univ. Whilst continuing his studies there under the celebrated Heltberg he associated with Jonas Lie, Vinje, Björnson, Botten-Hansen, and others. Thanks to Ole Bull, the violin virtuoso, he became director of Bergen Theatre from 1851 to 1857, and wrote for his productions, but practically all the MSS. have since been destroyed, with the notable exception of the vigorous historical drama, *Lady Inger of Oseid*. In 1857 he was appointed manager of the National Theatre at Christiania. A year later appeared his first saga-drama, the splendid *Warriors of Helgeland*. In 1864 he left Norway for Rome, and thereafter, except for short visits to Norway, he lived in Italy or Germany till 1891. I., the cynic, pessimist, and iconoclast, made his debut in 1862 with *Love's Comedy*, cleverly written in epigrammatic verse. In the same style there followed *Brand*, 1866, an attack on pietism, and *Peer Gynt*, 1867, his most influential and popular dramatic poem, called by many 'the Scandinavian

Faust.' It was, however, in the scathing satirical prose dramas which constituted his third period that the I. of European significance found mature expression. In the *League of Youth*, 1869, *Pillars of Society*, 1877, and *An Enemy of the People*, 1882, he attacked the whole fabric of modern politics—as he terms it, 'government by geographical formula'. I.'s studies in feminism are of equal interest and power; *Rosmersholm*, 1886, and *A Doll's House*, 1879, in which he discusses the problems of modern marriage, being among the best known. *The Lady from the Sea*, 1888, is an elegant poetic conception, essentially the same in



HENRIK IBSEN

E.N.A.

idea as *A Doll's House*. In *Ghosts*, 1881, I. exploits to the fullest the possibilities of hereditary disease as a dramatic motif. *The Wild Duck*, 1884, is, like *Brand*, an attack on unpractical idealism. His later works are: *Hedda Gabler*, 1890, *The Master Builder*, 1892, representing the zenith of his powers, *Little Eyolf*, 1894, *John Gabriel Borkman*, 1896, and *When We Dead Awaken*, 1900, all of which are chiefly developed from the ideas contained in his earlier works. All his writing is pre-eminently suited for the stage, and consummately skilful in technique. His influence on European drama at the turn of the century was considerable. His *Samlæde verker* have been ed. in 20 vols., 1928–52. See G. B. Shaw, *The Quintessence of Ibsenism*, 1891; G. Brandes, *Ibsen and Björnson*, 1899; W. Morison (trans.), *Correspondence*, 1905; E. Gosse, *Henrik Ibsen*, 1907; W. Mohring, *Ibsen und Kierkegaard*, 1928; J. Kröner, *Die Technik des realistischen Dramas bei Ibsen und Galsworthy*, 1935; B. W. Dow, *Ibsen, The Intellectual Background*, 19 P. E. D. Tennant, *Ibsen's Dramatic Technique*, 1948; J. Northam, *Ibsen's*

Dramatic Method, 1952; various plays in Everyman's Library, trans. by R. Farquharson Sharp.

Ibstock, vil. in Leicestershire, England, 5 m. N. of Market Bosworth. Archbishop Laud was rector of the par. church. The inhabs. are chiefly occupied in mining and in manufacturing tiles and bricks, the making of boots and shoes, and light engineering. Pop. 5400.

Ibycus (6th cent. BC), Gk lyric poet, b. at Rhegium, Italy, and spent most of his life at the court of Polycrates of Samos. According to legend he was murdered at sea near Corinth. The crime was traced by means of cranes which had followed the ship, and 'the cranes of Ibycus' became a proverbial expression for divine revelation of crime. The story is the subject of Schiller's poem *Die Kraniche des Ibycus*, 1798; for fragments of his verse, see J. M. Edmonds, *Lyra Graeca* (with trans.), 1922.

Ica, dept of S. Peru, bounded N. by Lima, S. by Arequipa, E. by Ayacucho, and W. by the Pacific; covers an area of 9796 sq. m., including small is. Much of the surface is sandy desert, but the valleys of the Chincha, Condor, and I. are fertile, and yield fruits, cotton, and indigo. Wine and brandy are made from the fruit, and a considerable amount of copper is mined. The chief tn is I. (San Gerónimo de I.), which is connected by rail to its port, Pisco (q.v.). Pop. (dept) 172,250; (tn) 21,400.

Icá, or Putumayo, riv. on borders of Colombia, Ecuador, and Peru; rises in the Andes, flows S.E. through tropical, rubber-bearing forest, and at São Antônio, in Brazil, joins the Amazon. It is navigable for small craft for 750 m. Total length 1000 m.

Icarus: 1. Or Icarus, a legendary Athenian who was taught the cultivation of the vine by Dionysus in return for hospitality. I. distributed his new gift freely, and the local shepherds, becoming intoxicated, thought themselves poisoned by him and slew him, throwing his body into a well. Erigone, his daughter, hanged herself in despair at the news. According to tradition, Erigone is the Virgo in the zodiac, Icarus is Boötes, and Icarus's dog, Maira, is Procyon or Canis Minor.

2. I. the Lacedaemonian, father of Penelope, whom he tried to dissuade from accompanying her husband, Odysseus, to Ithaca. She insisted with such modest firmness that her father erected a statue of modesty to her.

Icarus, see ICARIUS; also DAEDALUS.

Ice (a word common to the Teutonic languages), name given to the substance into which water changes when subjected to a sufficiently low temp. It is a colourless crystalline solid, generally assuming forms belonging to the hexagonal system; its habit of twining is the origin of the 'ice-flowers' and designs assumed by hoar-frost. In the form of hoar-frost, snow, and hail I. is often precipitated. The temp. at which I. melts into water is very easily determined, and for this reason is employed as one of the standard

temps. in the measurement of the scales of a thermometer (q.v.). In the Centigrade system this temp. is zero, as in the Réaumur, whilst in the Fahrenheit system it is 32°. In the act of freezing, I. undergoes a noteworthy expansion, so that I. at 0° C. is not as dense as water, as is proved by the fact that it floats thereon. In the converse process of melting, I. contracts, and the water formed contracts under heat till the point of maximum density, about 4° C. is reached. Above this temp. the expansion of water is continual, and at no temp. is water less dense than I. The density of I. at 0° C. is .9175; of water at 0° C., .99988; at 4° C., 1; at 10° C., .99976; and at 100° C., .95866. The coefficient of cubical dilatation of I. at moderately low temps. has been calculated as .0001585, and its specific heat is .505, or about half that of water. When I. is melted, although no rise of temp. takes place, a definite quantity of heat is absorbed, namely 80 calories per gram, and the same amount of heat is given out when water becomes I. This is expressed as the latent heat of fusion of I. Since water expands on freezing, its freezing point must be lowered by an increase of pressure, and it has been ascertained that for every additional atmosphere of pressure, the freezing point of water is lowered 0.0075 degrees. This discovery was theoretically worked out by James Thomson in 1894, and verified experimentally by his brother Wm Thomson (Lord Kelvin) in the following year. Many of the properties of I. are explained by this, among others that of regelation, by which 2 blocks of I. laid side by side in contact gradually fuse into one. The pressure at the point of contact melts the I., but this relieves the pressure and the water at once freezes again, until in time the 2 surfaces coalesce. The motion of glaciers is also probably due to this process.

I. forms on fresh water if the temp. of the air is below freezing point for sufficient time, but not until the whole mass of water is cooled down to the point of maximum density. Sea-water will not freeze, under the most favourable conditions, until a temp. of -2° C. is reached; in the I. formed four-fifths of the salt originally present is rejected, so that water melted from sea-ice has less salinity than the surrounding sea. I. exists on a gigantic scale in the glaciers and snows of mountainous regions, especially in the seas and lands of both Polar regions. From a physiological point of view, I. is an important agent in the denudation and configuration of the land. Many traces, for instance, are left by glacial action, which serve to show that the whole of Europe was at one time much more exposed to such action than now. (See GLACIAL PERIOD; DENUDATION; BOULDER CLAY; etc.) In the Upper Provs. of India, water is made to freeze at night by being placed in porous vessels, wrapped round with a wet cloth. In Bengal, pits are dug 2 ft deep and filled for three-quarters of the depth with dry straw. The water is

then placed on this straw in flat porous jars; it evaporates at the expense of its own heat and the cooling is rapid enough to neutralise the slow influx of heat through the cool air above, of the badly conducting straw below. The uses of I. are many, and its consumption in civilised countries is growing. I. is also largely made by artificial means. For details as to methods, etc., see REFRIGERATION.

Ice, Anchor, see ANCHOR ICE.

Ice Age, see GLACIAL PERIOD.

Ice-flowers, see FROST FIGURES.

Ice Hockey, Canada's national sport and rated the world's fastest game. I. H. has developed rapidly since the inception of rules in 1879. It originated from 'bandy,' a type of field hockey played on ice, and among early players in England were King Edward VII and King George V (when Duke of York). The sport gained a firm foothold in Britain in 1927, and now rivals soccer in popularity in many European countries. Under international rules, teams are limited to 15 players, of which 2 must be goal-keepers, and only 6 are permitted on the ice at any one time. The remainder are strategically substituted by the coach. Long, broad-bladed sticks, and a hard, vulcanised rubber disc called the 'puck,' are used by the well-padded players. Two referees control the game, which is divided into three 20-min. periods. The ice surface (approximately 200 ft by 85 ft) is surrounded by wooden 'boards' 3½ ft high, so that the puck is kept in play. Goals are 4 ft by 6 ft wide. The rink is divided by coloured lines which govern off-side rules. Top I. H. countries now include Russia, Sweden, and Czechoslovakia, all post-war world championship winners. Lack of natural ice restricts progress in Britain and Canadians are imported for league games. Professional players in Canada and the U.S.A. are among the world's highest paid sportsmen.

Ice-Plant, or *Mesembryanthemum crystallinum*, species of Aizoaceae found in South Africa and cultivated in Britain. It is an ann. plant with succulent leaves covered with glistening hairs, and bears white flowers.

Iceberg (Ger. *Berg*, mt), a mass of ice floating in water, which has been detached from a glacier (q.v.). I.s may be carried by ocean currents into warmer waters where they will slowly melt. The Greenland ice produces numerous large bergs and it is these that are the prin. source of danger to shipping in the N. Atlantic. An International Ice Patrol was estab. after the Titanic disaster in 1911 in order to warn shipping of the movement of ice. The Greenland I.s are irregular in shape, bluish in colour, and float with about five-sixths of their mass below water level. They may travel as far S. as the 40th parallel.

The N. Pacific has fewer I.s as the Alaskan land ice does not produce large ones; some bergs enter through the Bering Straits. Antarctic I.s may reach huge sizes. One was seen in 1893 off the Falkland Is. which measured 140 kilometres in length.

As I.s melt, rock debris they may be carrying is spread over the sea floor; in this way large boulders may be transported far out on to the ocean bed.

Icebreaker. Many seas and rivers in high lats. are closed to navigation, either seasonally or permanently, by ice. Ordinary ships are unable to force a passage through the ice and cannot risk sailing in ice-infested waters because of the danger of being holed through their thin hulls. A special type of ship, the I., has been evolved to meet these conditions. I.s are used to keep open important waterways, to open entrances to harbours early in spring, and to convoy ordinary ships. Their characteristics are: a strongly built hull with wedge-shaped bow, short and broad, small cargo space, and ratio of h.p. to normal displacement of one, or more than one, to one. The weight and power control the ice-breaking powers of the vessel. Thickness of plating and close ribbing are for protection against ice. In a modern I. plating is 32 mm. (1.3 in.) amidships increasing to 52 mm. (2.1 in.) at bow and stern (*Lenin*). The outer shell is joined to a thinner inner shell by means of strut framing, transverse and longitudinal bulkheads. The wedge-shaped bow allows the I. to ride up on the ice, crushing it by weight as well as driving force. The threat of being locked in ice is countered by the provision of 'heeling tanks' on each side in the space between the hulls. Water is pumped from one to the other of these tanks at the rate of about 320 tons in 85 sec. (*Glacier*), causing the vessel to rock free of the ice. I. sterns are frequently notched to allow the entrance of the bow of a vessel being towed; this prevents the vessels being parted by ice flowing between them. Propellers are protected from damage by ice-floes. Notable I.s constructed in recent years have been *d'Iberville*, 9930 tons displacement, 1953, and *Labrador*, 6040 tons, 1954 (Canada); *General San Martin*, 4500 tons, 1954 (Argentina); *Voima*, 4415 tons, 1954 (Finland); *Kapitan Belousov*, 5360 tons, 1954 (U.S.S.R.); and *Glacier*, 8300 tons, 1955 (U.S.A.). All, except *d'Iberville*, are diesel-electric and develop between 6600 s.h.p. (*General San Martin*) and 21,000 s.h.p. (*Glacier*). In 1957 the first atomic I., *Lenin*, was built in U.S.S.R. It is 134 metres (440 ft) long, 27.6 (90 ft) in beam, displaces 16,000 tons, and can develop 44,000 h.p. with a maximum speed of 18 knots. The fuel is slightly enriched uranium. I.s should be distinguished from 'ice-strengthened' ships.

Ice!, il of SE. Turkey, of which Mersin (q.v.) is the cap. Pop. 372,952.

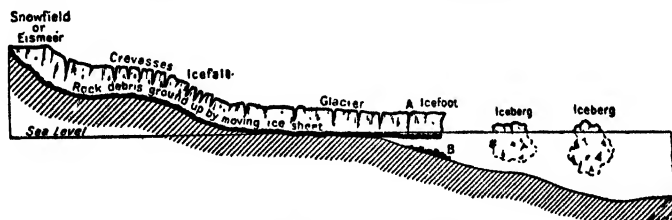
Iceland, is. rep. situated in the N. Atlantic Ocean. It is 250 m. from the SE. coast of Greenland and 600 m. W. of Norway. Its area is over 39,700 sq. m., length 298 m., and breadth 194 m. The total length of its coast-line is about 3730 m., about one-third of which belongs to the NW. peninsula. Pop. (1957) 156,033. In shape I. is a rough oval, its narrowest point being at the S. The

*Sport and General*

THE CANADIAN NATIONAL ICE HOCKEY TEAM PRACTISING AT HARRINGAY ARENA, LONDON

coast-line presents a continued succession of deep bays or fjords, penetrating far inland except for a considerable portion extending along the SE., which is almost unbroken. I. is an ice-covered plateau or tableland built up of volcanic rocks and pierced on all sides by fjords and valleys. The lowlands cover about one-fourteenth of the whole area, and are almost the only part of the is. which is inhabited, the central tableland being absolutely uninhabitable on account of its extreme barrenness. The habitable area of I. is about one-fourth; glaciers, lava-streams,

and elevated deserts making up the rest. The 2 bays, Hunafjörð and Breiðfjörð, separate the NW. peninsula from the main mass of the is., thus forming 2 tablelands—a large and a small. The isthmus connecting the 2 is scarcely 5 m. wide, but has an altitude of 748 ft. The highest point on the NW. peninsula is 3150 ft. The interior of the is. has a wild and desolate appearance and is covered by lofty mt.-masses of volcanic origin, many of them crowned with perpetual snow and ice. Óraefajökull (q.v.) is the highest mt in I.; Vatnajökull (q.v.) is the second



THE FORMATION OF ICEBERGS

Movements of the water are likely to detach an iceberg mass at the crack A. At B is rock debris (morainic deposit) brought down by the glacier; it is a terminal moraine under water.

highest peak. The glacier fields cover over 5000 sq. m., and glaciers exist in all the mts above 4000 ft. In sev. of the mts the volcanic agency is still active, and terrible eruptions have repeatedly occurred within the last 4 centuries. The best-known volcanoes are Hekla, Katla, and Askja. A large portion of I. is covered with lava, and the hot springs or geysers scattered throughout the is. are other specimens of volcanic agency. The main thermal area stretches from the extreme NE. to the extreme SW., where

sedums, and heaths being especially admired. As regards the fauna, species are few. There are many foxes and mink. About 1930 mink-otters were introduced to be bred in captivity for their fur, but because of the escape of some of these animals wild mink are now virtually pest. The polar-bear is an occasional visitant, and reindeer were introduced in 1770. The seas abound in seals and whales. Over half of the species of birds are water-fowl, of which the most important is the eider-duck on account of



Kemsley Picture Service

GULLFOSS (THE GOLDEN FALL)

Iceland's best-known waterfall

one of the main geysers throws up at intervals jets of water, stones, and mud to a height varying from 100 to 200 ft. In Mt Hekla (4891 ft high), which last erupted in Mar. 1947, are best exhibited the general effects of volcanic agency.

The scenery of the is. is of great natural beauty, the climate is mild for the lat., and the weather is extremely variable, storms and hurricanes often occurring. The vegetation is tolerably uniform throughout the is., presenting the characteristics of an Arctic-European type. Heath and bilberry cover large stretches of the surface, and grasses are of great importance to the inhab., who are dependent on them for supplying their live-stock. The development of forest-trees is insignificant, the birch being almost the only tree found, and this in a very stunted form—3 ft to 10 ft in height. The wild flora of I. is small and delicate, with bright bloom, saxifrages,

its down. The birds of prey are the Icelandic falcon and the eagle. The ptarmigan is the only game bird. Great numbers of sea-gulls, guillemots, and puffins are seen near their breeding places on the cliffs and islets round the coast. The hooper or whistling swan is also found in considerable numbers in I. The cod-fisheries are valuable, trout are plentiful in the lakes and streams, and salmon abound in many of the rivers. The sea round the coast teems with haddock, halibut, cod, and basking-shark. There are no railways in I.; but in 1954 there were some 5700 m. of completed roads. The national Church and the only one endowed by the State is Evangelical Lutheran. There is a univ. in Reykjavik. The chief products of I. are fish, fish oils, wool, mutton, and ponies. The chief exports are salted and frozen fish, meat, and fish oil, and much of them goes to the U.K. Reykjavik (q.v.) is the cap., with a pop.

of 82,035. Other tns are Akureyri, Hafnarfjörður, Vestmannaeyjar, Keflavík, Akranes, Siglufjörður, Ísafjörður, Húsavík, Nes, Saudárkrúkur, Ólafsfjörður, Seyðisfjörður (qq.v.).

History.—I. received the greatest portion of its pop. from Norway between 870 and 930, when it was colonised by Norsemen or Scandinavian Vikings,

another outstanding leader was ready to take his place. This was Björn Jónsson, whose good work was continued by his son, Sveinn Björnsson, as well as by Hannes Hafstein (qq.v.). Under more tolerable economic conditions the pace of progress became much faster.

In the year 1918 I. again became a sovereign state, but united as a constitutional monarchy to Denmark with one king. The First World War brought some trade benefit to I. Previously she had been without her own merchant fleet, and thus dependent upon Denmark, but now set about building one. The fishing fleet was expanded and modernised, and means of communication were improved. In sparsely populated and mountainous



*Ministry for Foreign Affairs,
Reykjavík*

CURING SALT FISH

though some settlements of Irish monks had been made about the end of the 8th cent. The first Norwegian settlement was made in 870 by Ingolf on the S. coast, and was estab. permanently 4 years later at what is now Reykjavík. Other settlers soon followed, and in the course of 60 years all the habitable parts of the coast were settled. The gov. was at first in the hands of the overseer of the temple in each settlement, but latterly, when the separate jurisdictions were joined together, a kind of aristocratic rep. was formed. Christianity was introduced in 981, and adopted by law in 1000, and schools and bishoprics were estab. I. was a dependency of the Dan. Crown from 1380.

Under the leadership of the great Jón Sigurðsson (q.v.) the 19th cent. was a time of great national awakening in I. But the country was poor, isolated, and materially backward, though the standard of popular education had always been high. Still, the enthusiasm aroused by the inspiring leader and the great poets who were his contemporaries spurred the people of I. on, and when Sigurðsson d.



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INGOLF ARNARSON, THE FIRST SETTLER OF ICELAND Statue by Professor Einar Jónsson

dist. roads for motor traffic were begun, and reclamation of land was accelerated. Inland passenger traffic by air began in 1928, but for another 12 years it was on a small scale, largely because there were no airfields, and no capital available for making them.

After the outbreak of the Second World War (Sept. 1939), and the occupation of

Denmark by the Germans (April 1940), the Icelandic ministry assumed control of its own foreign relations. Soon afterwards the is. was occupied by Brit. naval and military forces with the object of protecting Brit. maritime interests, because the is. was of great strategic importance in relation to U-boat warfare and as a potential base for the invasion of the Brit. Isles. In 1941, the Althing decided to establish a rep.; but pending the formal abrogation of the union with Denmark a regent was appointed from year to year. In July 1941, President Roosevelt announced that Amer. forces had occupied I. These forces were not intended to replace the Brit. forces. President Roosevelt, in a message to Congress, said that the U.S.A. could not permit occupation by Germany of strategic outposts in the Atlantic to be used as air or naval bases for an eventual attack against the W. hemisphere. The Brit. guarantee of the future of I.'s independence was repeated by Roosevelt, who said that the U.S. Gov. did not wish to see any change in the existing sovereignty of the country. By extending Amer. defences to I., a half-way house between Britain and America, Mr Roosevelt had taken a step that was of enormous consequences in safeguarding the life-line between the U.S.A. and Britain. By plebiscite (23 May 1944) the Act of Union of 1818 was repealed and a new constitution adopted providing for a republican form of gov. Executive power is in the hands of a ministry in Reykjavik, responsible to the national legislative assembly or Althing (q.v.) (founded in AD 930) of 2 houses. The membership of the Althing is maintained under the new constitution, at 52, of whom 14 are elected to form the Upper House.

The Second World War and the Anglo-Amer. occupation effected revolutionary changes in I. Capital flowed into the country and the Amer. forces brought powerful machinery for road-making and similar purposes. Britain and the U.S.A. showed themselves in all matters anxious to be of assistance to the country they had so regretfully felt constrained to occupy. Farm machinery of the larger type could be bought and land reclamation undertaken on a large scale. Roads could now be constructed 20 times more rapidly than before. Big electrification and housing schemes were embarked upon in all parts of I. As a result work is still plentiful and there is a labour shortage, both for fishing and agriculture, although there has been a considerable influx of people from neighbouring countries and Germany.

Nearly all farmsteads in I. are now on the telephone. There are ac. of green-houses heated by water from thermal springs, and a great many farmhouses, as well as sev. whole vils., are heated in the same manner. More than half of Reykjavik is so heated, including all the major public buildings. There are 2 very active aviation companies in I., and air traffic is increasing rapidly; it is certainly the mode

of travel and transport that suits the country best.

But the economic situation is precarious; the national economy is too narrowly based for security. There are few manufacturing industries, and no manufs. and little farm produce for export. For exports I. depends mainly upon the fishing industry, and the fishing grounds are showing unmistakable signs of depletion, a most serious matter when it is borne in mind that I. must import everything except farm produce and fish.

Language.—The Icelandic is the most northerly of all cultivated tongues. It is free from gutturals and excess of hissing sounds, soft and sonorous to the ear, and rich in roots and grammatical forms. There are 33 letters in the alphabet, all the Eng. except *w*, and *æ*, *ð*, and 2 characters for the Eng. *th*, *p* and *ö*. The present-day language is almost precisely the same as that spoken and written at the date of I.'s colonisation in the 9th cent.

Literature.—Icelandic literature may be divided into 2 periods, the anct, extending to the fall of the rep., and the modern, from that date to the present time. The literature of the anct period may be divided into 3 groups, viz. the anct, mythical, and heroic songs; the skaldic poetry; and the sagas. I. has always borne a high renown for song. Among the most important works in Icelandic literature is the collection of anct heathen songs called the Elder or Poetic Edda (q.v.). Songs of victory, elegies, and epigrams also belong to the anct period of the literature. Among the mythical songs may be mentioned the *Völuspá*, *Hamarsheimt*, *Hymiskvida*, etc. Of the writers of skaldic poems may be cited: Egill Skalla-Grímsson (q.v.), who wrote a fine lament for his son; Eyvindr, Kormak, etc. The crowning product of Icelandic genius, however, is the prose saga. This is, in its purest form, the life of a hero, composed in regular form and governed by fixed rules, and intended for oral recitation. The saga grew up in the quieter days that followed the change of faith (1000), when the deeds of the great families' heroes were still cherished by their descendants, and the exploits of the great kings handed down. At all feasts and gatherings the telling of stories was an important feature, and the reciter was obliged to work them into regular form. Besides the sagas consisting chiefly of local and family hist., they also comprise a large number of hists. and romantic works, amongst them being: the *Völunga Saga*; the *Gunnlaugs Saga*; the *Saga of Hrolf Kraka and his Companions*; *Frithiof's Saga*, etc. Of the larger and more important class of sagas referred to may be mentioned: the *Islandingsabók*; the *Landnámabók* (an account of the settlement of the is.); the *Kristni Saga*; the *Njáls Saga*; *Viga-Glúm's Saga*; *Egill's Saga* (the biography of a celebrated poet and chief); the *Sturlunga Saga*; the *Knytinga Saga*; the *Færeyinga Saga*; the *Eyrbyggja Saga* (an abstract of which was pub. by Sir Walter Scott), etc., etc.

Among recent writers, the following may be mentioned: the novelists G. Gunnarson (some of whose novels have been trans. into Eng.), E. H. Kvaran, and H. K. Laxness (a Nobel prizewinner); the poets E. Benediktsson, S. G. Stephansson, and D. Stefansson; and the dramatist I. Einarsson (q.v.). See also EDDA; FLA-TEYJARBÖK; LANDNAMABÖK; NJALS SAGA; RÍMUR; SAGA; SKALD; VÖLUSPÁ.

See E. Henderson, *Iceland*, 2 vols., 1818; K. Gjerset, *History of Iceland*, 1924; H. Hermannsson (ed.), *Islandica*, 1908; S. Jonsson, *A Primer of Modern Icelandic*, 1927; *The Iceland Year-Book*; V. Gudmundson, *Island am Beginn des XX Jahrhunderts*, 1904; T. Thoroddsen, *Island*, 1905-6; D. Bruun, *Turistrulær paa Island*, 1921; J. A. Beckett, *Iceland Adventure*, 1934; H. Lindroth, *A Land of Contrasts* (New York), 1937; B. Thordarson, *Iceland: Past and Present*, 1941, 1953; H. Leaf, *Iceland*, 1949; Agnes Rothery, *Iceland: Bastion of the North* (revised ed.), 1952.

Iceland Moss, see CETRARIA ISLANDICA.
Iceland Spar, clear, colourless variety of calcite (CaCO_3), found in Iceland. It forms large rhombohedra having a sp. gr. of 2.7 and a hardness = 3. The value of I. S. lies in its strong double refraction, which makes it pre-eminently suited for polariscopes, Nicol's prisms, and other optical purposes. The supply from Iceland, where crystals of very large size are found, is nearly exhausted, and no substitute has been found to compare with it.

Icenl, Brit. tribe who inhabited East Anglia at the time of the Rom. invasion. Their queen, Boadicea (q.v.) headed a revolt against the Romans AD 61.

Ich Dien (Ger. 'I serve'), motto of the princes of Wales. It was erroneously said to have been adopted by the Black Prince, together with the 3 white ostrich plumes, from John, king of Bohemia, who fell at the battle of Crécy. The origin of both the motto and feathers is obscure; but in his will the Black Prince refers to 2 shields of Arms: (i) the shield for war, i.e. the royal arms differenced with a label Argent; (ii) the shield for peace: sable 3 ostrich feathers erect, their quills piercing as many scrolls inscribed with the words 'Ich Dien.' The motto has been borne by the princes of Wales for 600 years.

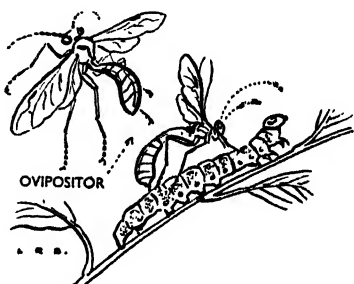
Ichabo, is., $\frac{1}{2}$ m. in circumference, off the SW. coast of Africa. It belongs to the Union of South Africa and produces a phenomenal quantity of guano.

Ichabod ('the glory has departed'—1 Sam. iv. 19 and xiv. 3), son of Phinehas son of Eli, so named by his mother (who d. giving him birth), overwhelmed by the news of the loss of the Ark, the defeat of Israel, and the death of Eli and his sons.

Ichang, riv. port in the Chinese prov. of Hupeh; it is situated on the N. bank of the Yangtse R., about 15 m. below the entrance to the great Yangtse gorges. The hilly country round is rich in rice, cotton, wheat, and barley fields, and in many kinds of fruit. I. is an important shipping centre, being the gate to the

immense coalfields of Szechuen. Pop. 108,000.

Ichneumon (Gk *ichneuon*, to track or trace out), name given to a species of *Herpestes*, a genus of small carnivorous mammals belonging to the Viverridae; they have elongated weasel-shaped bodies, small heads, rounded ears, and short legs. *Herpestes ichneumon* ranges over S. Asia and all Africa, and *H. ichneumon*, variety *Widringtonii*, is found in the S. of Spain. The former was regarded as sacred by the Egyptians, who gave it the name of Pharaoh's rat; the embalmed bodies of Is were often preserved by priests in the temples. They will eat the eggs of serpents and swallow smaller vermin, and are sometimes domesticated for this purpose. See also MONGOOSE.



ICHNEUMON-FLY, LAYING EGGS IN LIVING CATERPILLAR

Ichneumon-flies, name applied to the Ichneumonidae, a family of insects belonging to the order Hymenoptera. They are found in almost all parts of the world, and in the larval state are generally parasitic in, and occasionally on, Lepidoptera and other orders of insects; the Ichneumon larvae thus destroy thousands of caterpillars, and are even inimical to spiders. The distinguishing features of the Ichneumonidae are the long, jointed antennae, closely compacted at the extremities. The genus *Pezomachus*, or wingless Ichneumons, are somewhat ant-like in appearance, and are very common in Britain. *Agriotypus armatus* is a remarkable Brit. species which goes under water for the purpose of depositing its eggs in the larvae of Trichoptera.

Ichor, ethereal fluid which, according to Gk mythology, flowed in the veins of the gods instead of blood. The word is still used in the poetical sense. In pathology it signifies a thin, serous, or sanious fluid from a sore or wound.

Ichthyodorulites (Gk *ichthys*, fish; *doru*, spear; *lithos*, stone), fossil fin-spines of sharks, which are often found isolated in ancient strata.

Ichthyology (Gk *ichthys*, a fish), term applied to that branch of zoology which treats of fishes (q.v.).

Ichthyornis, an extinct genus of small tern-like birds with well-developed wings and a keeled breast-bone which are found in the Upper Cretaceous strata of Kansas. They had rows of reptilian teeth fixed in distinct sockets.

Ichthyosaurs (Gk 'fish-lizard'), porpoise-shaped aquatic reptiles which lived in Mesozoic times, and were particularly abundant in the Jurassic. They were fish-like in appearance, with a large caudal fin and a deep fusiform body; the limbs (particularly the larger pectoral) were highly adapted for use as steering paddles, with many extra finger-joints and sometimes extra digits. The vertebrae were short and deeply biconcave, making the backbone very flexible. The caudal vertebrae continued into the lower lobe of the shark-like double tail-fin. The skull had a long beak bearing numerous conical teeth, the external nostrils were



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A JURASSIC ICHTHYOSAUR

far back, while the large eyes were ringed with sclerotic plates. I. were carnivorous air-breathers, and were apparently viviparous in reproduction; the skeletons of young I. have been discovered inside the body of a large fossilised individual. The earlier Triassic I. (e.g. *Mizosaurus*) were more primitive, with a straighter, smaller tail, less specialised paddles, and a shorter snout.

Ioklesham, tn and par. of Sussex, England, 4½ m. from Rye. I. has a fine Norman church with a 14th-cent. chancel. Pop. 1800.

Ioknield Way, pre-Rom. track across SE. England. It runs from the Wash in a SW. direction by way of Cambs, through Letchworth and Tring in Herts, making its way over the Thames and following the line of the Berkshire Downs to the source of the Kennet in Wilts.

Iokmkill, see IONA.

Icon, representation of Christ, an angel, or a saint in Gk and Orthodox E. churches. Is are painted on a flat surface, but parts are often covered with gold or silver embossed plates. See also **ICONOCLASTS**.

Iconium (modern Konya), a Phrygian city, in the plain of Lycaonia, N. of the Taurus, rivaling Damascus in antiquity and importance in ant. times. St Paul visited it on his first journey, coming from Antioch, and met success among both Jews and Gentiles (Acts xiii. 51-xiv. 1 ff.). Ill-adapted for defence, I. owed its continuance to its central

position and its well-watered fruitful dist. It became a Rom. colony, and in later times was the cap. of the Seljuk Empire. See KONYA.

Iconoclasts (Gk 'image-breakers'), the Christian party in the Byzantine empire which, in the 8th and 9th cents., opposed the veneration of icons (q.v.) as a Christian devotion on the ground that such veneration was equivalent to image-worship (q.v.). The bitterness which accompanied the Iconoclast dispute was due to the fact that it tended to crystallise the most violent political sympathies. The 2 decrees (726 and 730) of the first Iconoclast emperor, Leo III, the Isaurian, provoked riots in Constantinople and rebellion in Greece. The struggle was intensified under his son, Constantine V, and the Iconoclast theories were upheld at a council in 753. The empress Irene, widow of Leo IV and regent for her son, Constantine VI, secured the restoration of icons and of their veneration, and the decrees of 753 were reversed by the 7th Oecumenical Council in 787. Iconoclasm was revived under the emperors Leo V, Michael II, and Theophilus; but the veneration of icons was again restored by Theodora, widow of Theophilus, in 843. The question was never re-opened; but there was a spontaneous outburst of Iconoclasm at the Reformation, and Eng. cathedrals and churches bear witness to many acts of vandalism. See E. Marin, *Les Moines de Constantinople*, vol. iv, 1887; L. Bréhier, *La Querelle des Images*, 1904; J. Hastings, *Encyclopaedia of Religion and Ethics*, vol. vii, 1914; E. Bevan, *Holy Images*, 1940.

Iconostasis (Gk, literally 'image-stand'), in Byzantine architecture, a screen separating the chancel from the nave of a church and serving as a stand for religious pictures ('icons'). In the E. Orthodox Church it is ornate and completely shuts off the sanctuary from the nave.

Icosahedron, see POLYHEDRON.

Icterus, see JAUNDICE.

Ictinus, famous Gk architect who lived towards the end of the 5th cent. bc, and was thus a contemporary of Pericles and Phidias. He designed the Parthenon at Athens (447-432 bc) in conjunction with Callicrates; also the temple of Eleusis, where the mysteries were celebrated; and the temple dedicated to Apollo Epicurius, near Phigalia in Arcadia. Portions of all these buildings still exist.

Id, see FREUD, SIGMUND.

Ida (fl. 547-59), 1st Anglian king of Bernicia. His rule probably did not extend S. of the Tees, the kingdom of Deira, between that riv. and the Humber, being founded after his death.

Ida, or Iddah, tn in Federation of Nigeria, situated on the E. bank of the Niger, near the boundary of N. and S. Nigeria.

Ida (Turkish Kaz-Dagi), mt range in Asia Minor, which extends through Phrygia and Mysia, and commands the ant. plain of Troy. Mt Gargarus (5748 ft), its loftiest peak, was the seat of the temple erected to Cybele, the *Idaea Mater*.

Ida, Mount, or Pallorati, in Crete, was famous in the worship of Zeus, the god having been nurtured, according to mythology, in one of its caverns. This celebrated peak is situated almost in the centre of the is., and rises to a height of 8060 ft.

Idaho (Indian 'mountain-gem'), Rocky Mt state of U.S.A., largely in the basin of the Columbia R. It is bounded N. by Brit. Columbia, E. by Montana and Wyoming, S. by Utah and Nevada, and W. by Oregon and Washington. The

The land is more suited for grazing than for agriculture, but wheat, oats, barley, the famous I. potatoes, alfalfa, beans, hay, sugar-beets, apples, and prunes are raised. Irrigation is important (I. has 30 dams), and major irrigation projects include Amer. Falls and Minidoka dams. The state is a leading producer of cheese, butter, and wool. Gold has been found on Pend l'Oreille R. since 1852. The Coeur d'Alene mines of gold, silver, lead, copper, and zinc are famous. Ann. mineral production is over \$75,000,000.



Donald Brunt

THE ICKNIELD WAY BETWEEN LETCHWORTH AND ICKLEFORD, HERTFORDSHIRE

ter. was admitted to the Union in 1890. Area 83,557 sq. m. In the S. is the valley of the Snake (Shoshone or Lewis) R., noted for its canyons and numerous cataracts. In the N. are the S. Selkirk Mts, the Coeur d'Alene Mts, and Coeur d'Alene Lake. The Clearwater Mts and Salmon R. Mts form a barrier between the N. and S. parts of I. In the W. are the Seven Devils Mts, while along the Montana boundary is the Bitterroot Range, rising to peaks of 9000-10,000 ft. Bordering the Snake R. plain on the N. are the Sawtooth Mts, Pioneer Mts, Lost R. Range, and Lemhi Range. SE. are outliers of the Wasatch and Teton ranges. There are deserts and sage plains and fields of basalt. All geological ages, from Silurian to Pliocene, are represented, especially the Tertiary and post-Tertiary periods. There are over 40,000 farms in I. with an average acreage of 300.

A great source of wealth is timber, including W. white pine, yellow pine, Douglas fir, lodgepole pine, white fir, and Engelmann spruce. Public lands comprise 64 per cent of the state's area, some 21,000,000 ac. lying in national forests. There are 23 cos., the chief tns being Boise (cap.), 34,390; Pocatello, 26,131; I. Falls, 19,218; Twin Falls, 17,600; Nampa, 16,185; Lewiston, 12,985; Coeur d'Alene, 12,198; and Moscow (with univ. of I.), 10,593. The pop. of I. is 288,637. I. has a governor, a senate of 44 members, and a house of representatives of 59 members, all elected for 2 years. I. is represented in Congress by 2 senators and 2 representatives. I. State College is at Pocatello. I. is popularly known as the Gem-state. See H. H. Bancroft, *Washington, Idaho, and Montana*, 1890; J. E. Rees, *Idaho Chronology*, 1918; F. E. Lukens, *Idaho Citizen*, 1925; Annie

Greenwood, *We Sagebrush Folk*, 1934; Federal Writers' Project, *Idaho: A Guide in Word and Picture*, 1937; M. D. Beal, *A History of South-Eastern Idaho*, 1942; *The Columbia-Lippincott Gazetteer of the World*, 1952.

Idaho Falls, city, cap. of Bonneville co., SE. Idaho, U.S.A. It is a shipping centre for an irrigated agric. area (potatoes, wheat, sugar-beet, seed peas, alfalfa, livestock); there is food processing, metal-working, and lumbering. Silver, lead, and gold mines are near by. U.S.A.

young. I. and his brother were Argonauts; they were killed on a raid into Arcadia. There are sev. variations of the legend.

Iddesleigh, **Stafford Henry Northcote**, 1st Earl of (1818-87), statesman, b. London and educ. at Eton and Balliol College, Oxford. He became private secretary to Gladstone in 1842, and entered Parliament as a Conservative in 1855. Disraeli appointed him president of the Board of Trade in 1866, and in the following year promoted him to the India



MOUNT IDA, CRETE

atomic reactor test station is 30 m. W. on Snake R. plain. I. F. has large municipally owned hydro-electric plant.

Idalium (Gk *Idalion*), anct tn of Cyprus, was situated almost in the centre of the Is., on the site now occupied by the vil. Dalin or Idalion. It was sacred to the worship of Aphrodite, who was hence named Idalia. The tn was destroyed by earthquake before the time of Pliny.

Idas, son of Aphareus and Arené, and brother to Lynceus, who wooed Marpessa, daughter of the riv.-god Euenus, and carried her off from Apollo, who also sought her. They fled in a winged chariot given by Poseidon, but were overtaken by Apollo at Messenai, where god and mortal fought for the nymph. Zeus, interposing, told her to choose between them and she chose I. She became the mother of Cleopatra and Alcyoné, who incurred the wrath of Apollo, and d.

Office. In 1874 he became chancellor of the Exchequer, and in 1876, when Disraeli went to the House of Lords, he became leader of the House of Commons. Created earl of Iddesleigh in 1885, he went to the Foreign Office in 1886. As a statesman, though quite free from self-interest, he lacked initiative. See Andrew Lang (ed.), *Life, Letters and Diaries*, 1890.

Ido Languages, see INDO-EUROPEAN LANGUAGES.

Idea (Gk, from *idein*, to see; Lat. *species*), term widely used both in philosophy and in common parlance for a mental image of any external object or for the abstract conception of a class of objects. It is also used in a wider sense for any product of intellectual action. Plato (q.v.) made use of the term in metaphysics to define the absolute realities, eternally existing, on the model of which

all the objects which can be perceived are made. These vary in detail, but the one archetype or 'idea' remains constant, and can be apprehended only by the action of the intellect. Empirical thinkers, who insist on the reality of external objects have never accepted this usage. Locke, at the beginning of his *Essay on the Human Understanding*, defines the term 'idea' as 'whatsoever is the object of the understanding when a man thinks,' including, that is to say, all objects of consciousness—precepts, images, and concepts. Hume limited the term to the mentally reconstructed images of perceptions, while he introduced the term 'impression' for the direct perception. This use of the term is still common in popular language. Kant defined I.s (called by him Transcendental I.s) as the product of the Reason (*Vernunft*), of which they are the highest concepts, transcending the understanding, and therefore incapable of verification by experience. In the language of Hegel and the Idealists, the term almost returned to its Platonic significance, being used for the Absolute, which is the beginning and end of all things. See EPISTEMOLOGY. See A. Schopenhauer, *The World as Will and Idea*, trans. 1883-6; A. N. Whitehead, *Adventures of Ideas*, 1933; H. Heyse, *Idee und Existenz*, 1935; N. Hartmann, *Zur Lehre vom Eidos bei Platon und Aristoteles*, 1941.

Idealism, conception in philosophy according to which ideas are the only things known. The conception is developed along different lines by various philosophers, including Plato, while later systems were evolved by Locke, Descartes, and Spinoza up to Berkeley; but perhaps the most widely known are those of Leibnitz, Hegel, and Kant. Broadly speaking, I. may be discussed under the 2 main systems of subjective I. (or, as it is sometimes termed, Spiritual Monadism or Pluralism) and Spiritual Monism.

Subjective I. was expounded by Leibnitz as a belief that each individual mind exists apart from every other mind as a distinct unit living as it were in a universe of its own, so that nothing happening in another mind's universe is the same as that which happens in its own. We are aware, not of objects themselves, but merely of sensations produced by the objects which bring consciousness of them from our sensory disturbances. We become aware of the sensation rather than the object. Thus we experience not things of the world, but our own feelings, which give us images and representations of the world of objects. This position is known as Representationalism. Berkeley and Hume and perhaps the Italians Croce and Gentile (q.v.) belong to this school. Berkeley maintains that there is, at least to us, no external world, since all we know is our impressions of matter. He says in effect 'its existence consists in its being perceived.' This conclusion is strenuously criticised by Realists (see REALISM). Spiritual Monism differs from this theory, particularly regarding its

sense of isolation of the mind. Hegel, with whom may be associated Schopenhauer and Bergson, though each has points of variance, holds that each individual mind is a part of a universal force, fused into the universal embrace of the spiritual force of which it is only temporarily individual, that its very existence depends upon its being part of a greater force, that no object can be said to exist without its having a relationship to other objects. It is a part of another whole, which in turn is a localised part of yet another whole, until, finally, the universal whole is comprehended. This is called by Hegel the Absolute, and is certainly a more congenial conception than the intellectual loneliness of the mind according to the Pluralists. This idea of the Oneness of the Universe is the chief inspiration of those theologians who call God what for Hegel is the Absolute, and what Schopenhauer terms the Will. But whereas Hegel's idea of the Universal Whole is purely intellectual, Schopenhauer's Will is of the instincts and is ceaselessly and spiritually striving. Bergson, however, sees in his unity of all things unending change as its mainspring, and claims that there is nothing but change, and, therefore, matter always in process of change has not existence at any given time.

Kant's idealism challenges Leibnitz's and Berkeley's in that there is no evidence that we know our mind any more intimately than we know objects. We are conscious of ourselves only in knowing something not ourselves. He agrees that all knowledge depends upon perception, but insists further that this knowledge is always limited by the fact that we are finite minds controlled by a particular place and time. Thought can extend the range of perception which reveals an object as a part of a whole which stretches indefinitely beyond in space and time. For further detail of Kant's standpoint the reader is referred to his *Critique of Reason*. Scholastic philosophy groups together all these systems under the term 'transcendental idealism,' to which 'immanent idealism' is opposed by the neo-scholastics. Their position is that the intelligibility of things is immanent in them, and through that intelligibility the mind comes into direct contact with the thing.

The word I. has also taken another meaning, of a purely literary nature—the expression of beautiful or optimistic temperament; in its results, it is analogous to the more general aesthetic ideology of Cousin and Lessing. In this sense, such writers as Fogazzaro, Maeterlinck, Shelley, etc., are idealists, apart from any consideration of their purely philosophical sympathies. See FICHTE, JOHANN; HEGEL, GEORG WILHELM; SPINOZA. BARUCH; etc.

See E. Caird, *Hegel*, 1903; H. Bergson, *Philosophy of Change*, 1911; C. E. M. Joad, *Mind and Matter*, 1925; W. R. Inge, *Personal Idealism and Mysticism*, 1924; E. G. Braham, *Ourselves and Reality: Personality in British and American*

Idealism from the time of T. H. Green, 1930; J. H. Muirhead, The Platonic Tradition in Anglo-Saxon Philosophy: Studies in the History of Idealism in England and America, 1931; G. W. Cunningham, Idealistic Argument in Recent Philosophy, 1933; A. Liebert, Die Krisis des Idealismus, 1936; R. N. Cross, Idealism and Realism, 1945.

Identity, term with various connotations according as it relates to questions of logic or of metaphysics. The logical law of I. is usually expressed by the formula $A = A$, or A is A . It is a necessary law of self-conscious thought, being, in fact, merely the positive expression of the law of contradiction, which states that a judgment cannot be true and untrue at the same times, and that the same attribute cannot at the same time be affirmed and denied of the same subject. Without such a law no thinking would be possible. The philosophical question of I. is concerned largely with the various ways in which I. can be predicated, and to the exact connotation of the term. The question as to whether or not I. excludes difference is an important one. Many have held that, so far from excluding difference, it actually implies it; in other words, that I. is not undifferentiated, but differentiated, likeness. The question, however, is one of the conceptions of philosophical atomism. (See W. James, *Principles of Psychology*, 1890, and B. Bosanquet, *Essays and Addresses*, 1889.) The question of personal I., that is to say, of the continuity of personal experience in the exercise of intelligent causal energy, the results being associated in memory, was first brought into prominence by Locke (*Essay*, bk II, ch. xxvii), and soon occupied the attention of Hume and Butler. The fact is that which distinguishes each person from other thinking beings, and with which the preservation of sanity is closely bound up. See E. Meyerson, *Identity and Reality*, 1930.

Ideography, representation of ideas by signs or symbols. I. may be considered as the second stage of true writing (see WRITING). In I., the use of signs depicting concrete, natural objects (see PICTOGRAPH) is extended to express similar concrete concepts and analogous abstract conceptions. In other words, the ideograph represents not so much the thing it shows as the underlying idea associated with this thing. Thus, for instance, in cuneiform writing (q.v.), the symbol depicting the star came to represent also 'sky, heaven,' 'god,' the adjective 'high,' and so forth; and the pictograph 'leg' was also the ideograph for 'to go,' 'to stand,' 'to bring.' The name of the object or its action is, however, closely identified with the picture. As a system of writing, I. consists of definite pictures, conventional and simplified, selected by agreement or custom from the many experimental pictures.

Ideology, the system of political and social ideas upon which a community or state is based. The I. of primitive communities must have been vague, but

seems to have rested on a sense of clan or tribe, as does that of present-day aborigines. An increased awareness of the importance of the individual began with the Greeks, and, for example, Aristotle's political philosophy depended upon his belief that 'natural' man was 'man in society' and that only in an organised society could he find fulfilment; 'man,' therefore, 'is a political animal.' It is, however, noteworthy that Aristotle had to admit of a class of slaves in order to allow citizens the leisure to lead 'the good life.' The spread of Christianity emphasised the importance of the individual, and at the same time evolved the old Law of Nature into the Law of God as the final standard by which the acts of temporal rulers should be judged. The danger of anarchy on the one hand, and of ecclesiastical domination on the other, was met in practice by the emphasis laid upon the absolute power of the ruler. This, in its turn, was countered by the theory of the Social Contract as the basis of security, which, however unhistorical, became a powerful weapon against authoritarian rule in the hands of John Locke and others. The conflict of modern times has been, basically, between those who conceive of the State merely as a machine for carrying out the will of the members of a society, and those who, deriving from Hegel, conceive of the State as an organism greater than the mere sum of its members and possessing a personality; the individual finds full satisfaction in sinking his will into that of the State. To the latter group belong totalitarian systems: to the former, democracies. The Communist position is somewhat anomalous; the idea that the State should ultimately 'with away' would seem to be a denial of Hegelianism, whereas in practice an authoritarian system would seem to result from the identification of the will of the people with one political party.

Idea, in the Rom. calendar, the 8th day after the Nones, i.e. the 13th of all months except Mar., May, July, Oct.:

'March, July, October, May

Make Nones the 7th, Idea the 15th, day.'

See CALENDAR.

Idfu, see EDUF.

Idiocy, a congenital mental deficiency of severe degree. Little is known of the pathology of I. and, except in such cases as hydrocephalus (q.v.), no gross lesion of the brain can be found. I. is a hereditary disease due to the emergence of a recessive gene. It is commonly associated with other congenital defects, notably congenital heart disease. There is no direct evidence to show that shock or injury to the mother during pregnancy can cause I. in the foetus. It is interesting to note, however, that a greater number than average of children were b. with congenital malformation (but no idiocy) during the height of the aerial attacks in SE. England in 1941-2. Idiots are susceptible to infections and this, together with the allied heart disease when it exists, makes their expectancy of life about 14 years. *Mongolian I.* is a form of I. characterised

PATHOLOGY. For the legal sense, see **LUNACY**.

Ido, or **Revised Esperanto**, is, as its name implies, the offspring of Esperanto (q.v.), the international auxiliary language. The Delegation for the Adoption of an Auxiliary International Language, founded in 1901 (proceeding from the International Exhibition in Paris in 1900), appointed in 1907 a committee. This selected Esperanto as the international auxiliary language with some modifications to be decided by a permanent commission on the basis of a plan presented under the title of I. The 2 chief alterations effected are the doing away with all accented letters and the suppression of a few grammatical rules (e.g. accusative case, agreement of the adjective) which the partisans of I. consider unnecessary. The main alphabetical modifications were the adoption of *ch* and *sh* (as in English), and *v* and *y* as semi-vowels. In 1928, out of I., a new international auxiliary language was invented by O. Jespersen; it is called *Novial* (*Nov International Auxiliari Lingue*).

Idocrase, or **Vesuvianite**, mineral consisting essentially of silica (37 to 39 per cent), alumina (13 to 61 per cent), and lime (33 to 37 per cent), together with a small percentage of oxide of iron, magnesia, and water. It occurs in short tetragonal crystals, which show a large number of faces (sp. gr. 3.4, h. 6.5). The mineral has a vitreous lustre and varies in colour from brown to green, or, more rarely, blue, red, or nearly black. It was first found in dolomitic blocks ejected from Vesuvius, but occurs also in granular limestone, serpentine, gneiss. The finest specimens come from Siberia, Piedmont, and Norway, and are cut, polished, and sold as chrysolite (q.v.) or jacinth (see **HYACINTH**).

Idolatry (Gk *eidōlon* and *latría*, idol-worship), worship paid to images or other objects, and generically all worship of visible and concrete, as opposed to unseen, existences. St Paul uses it for worship of false gods, and the whole pagan cultus (Gal. v. 20; 1 Cor. x. 14; 1 Pet. iv. 3). The view of the early Church that I. and polytheism are a degeneration from a higher primeval faith has been confirmed by the researches of W. Schmidt (*Origin and Growth of Religion*, Eng. trans. 1931). They accompany the growth of civilisation, but are not themselves a sign of spiritual growth. While absent among Hottentots, Fuegians, Vedda, Bushmen, and others, I. was extensively practised among the great civilisations of old, by Egyptians, Chaldeans, Indians, Greeks, Romans, Mexicans, and Peruvians. The earliest stages of I. are Naturism and Animism. Fetishism, a degraded form of the latter, is often the direct antecedent of I. The human figure came to be the predominant model. The Hebrews preserved the primitive monotheism, and (directed by the

Decalogue and purged by historical discipline) became violently opposed to any images of Deity. Christianity, however, believing in the Incarnation of God in human form, abandoned the prescriptions against images. They were probably introduced in the 2nd cent., and are often found in Christian tombs in the Rom. catacombs. In the 6th and 7th cents. a reaction arose in the E., culminating in iconoclasm (see **ICONOCLASTS**). The Reformers repudiated the use of images as idolatrous, but Luther allowed them as helpful to devotion. See K. Kraus, *Roma Sotteranea*, 1897; G. D. Alviella, 'Les Origines de l'Idolatrie' in *Revue de l'histoire des Religions*, xii, 1885; J. Lippert, *Culturgegeschichte*, 1886; A. B. Lubbock, *Origin of Civilisation*, 1902; J. Hastings, *Encyclopaedia of Religion and Ethics*, vol. vii, 1914; E. Bevan, *Holy Images*, 1940.

Idomeneus, son of Deucalion, and grandson of Minos. As king of Crete, he led 80 ships to Troy and played a leading part there. Later writers say he vowed, in a storm, if he arrived safe home, to sacrifice to Poseidon whatever he first met on landing. The victim was his son, and his subjects, in consequence, expelled him. He wandered in Calabria and Italy. He estab. a shrine of Apollo near Colophon where he d. and was buried.

Idrija (It. *Idria*), tn in Slovenia, Yugoslavia. Between the First and Second World Wars it was in Italy (see **VENEZIA GIULIA**). It has quicksilver mines which have been worked since the 16th cent., and lace is made. Pop. 11,000.

Idris, mythical figure in Welsh tradition who had his rock-hewn chair on the summit of Cader Idris. He was supposed to have the power of conferring poetic inspiration, and of inducing madness or death.

Idrisi, Abu Mohammed El-, see **EDRISI**.
Idumaea, see **EDOM**.

Idun, or **Iduna**, Norse goddess, daughter of the dwarf Svald, who became the wife of Bragi. She personified the reviving year, escaping from imprisonment in the nether world by Thiazi (winter), and appearing again in the shape of a bird in the springtime.

Idyll (Gk *eidyllion*, little picture), a poem of idealised rustic life, such as those of Theocritus (q.v.). The term is often interchangeable with pastoral or bucolic, but is sometimes used with a wider meaning as in Tennyson's *Idylls of the King*. From association of the pastoral with the 'golden age' the term I. has also come to mean a scene of ideal happiness.

Ieper, see **YPRES**.

Ierne, see **IRELAND**.

Ierugena, Johannes Scotus, see **ERIGENA**.

Iesi, or **Jesi**, It. tn, in the Marche (q.v.), on the Esino, 17 m. SW. of Ancona (q.v.). It has a fine cathedral, and was the bp. of the emperor Frederick II (q.v.). Pop. (com.) 32,800.

If (if, a yew-tree), Fr. islet of the dept of Bouches-du-Rhône, in the Golfe du Lion (q.v.), 2 m. SW. of the harbour of

Marseilles (q.v.). Its fortress, Château d'If, was built by Francis I in 1524; it was used as a state prison (Mirabeau and Philippe Egalité being among its prisoners), and was made famous by Alexandre Dumas's *Count of Monte Cristo*.

Ifé, tn in W. Nigeria, 45 m. ENE. of Ibadan, regarded by many Yorubas as a 'sacred' city and the first place on earth to be inhabited by man. The Oni of I. who lives in the *alfin* (palace) is regarded not only as the ruler of I. but also as a spiritual leader of the Yorubas. He is an



British Museum

IFÉ BRONZE HEAD

enlightened ruler and administrator. The Oni attended the conference on Nigerian constitutional matters held in London, May-June 1957. Pop. (estimated) 111,000.

I. is also noteworthy for the bronze heads of remarkable workmanship and unknown origin first seen by European travellers in 1910. The heads are hollow and may have been mounted on poles; the features are distinctive and suggest individual portraits. The features are not negroid, and the heads suggest Egyptian influence and craftsmanship. Experts hold divergent views on the origin of these heads; it has been said that they may be of anct Mediterranean origin or that they may have been made in c. 13th cent. The latest date hazarded for the heads is the 16th cent. Local theories maintain that the heads represent departed deities and other equally attractive but untenable ideas. It is unlikely

that the heads were in fact cast in Nigeria since they contain over 70 per cent copper (an analysis quoted by the Brit. Museum). Copper is not known to exist in Nigeria or in any contiguous areas, though a feasible theory is that copper may have been obtained from the metal of guns from wrecked Portuguese or other European ships. Furthermore indigenous art is inclined to be reminiscent of caricature, and although during the 16th cent. native Benin brasswork was at its zenith (see BENIN; NEGROES, *West African Indigenous Art*), compared with the I. heads Benin work is crude while the features, unlike the I. subjects, are negroid. Since in anct times there was considerable traffic across the Sahara from N. Nigeria to what are now Algeria and Morocco (slaves, gold, and ivory to the N., and beads, swords, and armour, possibly silks also, to the S.), it is not impossible that the I. heads were brought over with the caravans, or that the metal of which they are made or the craftsmen who fashioned them reached Nigeria by the same route. In 1938 at least 7 of these heads were found during building operations at I. Two of these were acquired by an Amer. anthropologist and are now in the U.S.A.; another was subsequently acquired by the Brit. Museum.

Iffland, August William (1759-1814), Ger. actor and dramatist, b. at Hanover. He was a successful actor, especially in comic roles. In 1796 he became director of the Berlin National Theatre, and subsequently superintendent of all the royal theatres, the Berlin stage reaching its highest point under his management. He wrote some 65 plays, among which are (titles trans.): *The Bachelors* and *The Lawyers*, 1799; *The Nephews and Crime from Ambition*, 1800; and *Conscience*, 1801. His dramatic criticism is to be found in his *Almanach für Theater und Theaterfreunde*, 1815, and his *Theorie der Schauspielkunst*, 1815. See his collected dramatic works, 1844; Duncker, *Iffland in seinen Schriften*, 1859, and *Iffland's Berliner Theaterleitung*, 1896, and monograph by E. Kilewer, 1937.

Ilni, seaport tn and dist. of W. Morocco, Africa, 35 m. from Aguilon, opposite the Canary Is., ceded to Spain by Morocco in 1860. By the Franco-Sp. agreement of 1912 it extends along the W. coast of the N. of Wadi Draa and a distance of 15 m. inland from the coast. Pop. chiefly engaged in fishing and cultivating garden produce. Area 741 sq. m.; pop. 35,000.

Ifrat, Ifreet, Afrat, or Afreet, in Arabic folklore, ogre of an evil disposition.

Igarka, tn in the Krasnoyarsk Kray (Siberia), riv. port on the Yenisey, 425 m. from the mouth, accessible to sea vessels. It has a major sawmilling industry (for export) and a graphite plant. It is a local cultural centre. I. was founded in 1928, and developed largely by forced labour. Pop. (1932) 12,000.

Igel, Ger. vil. in the Land of Rhineland-Palatinate (q.v.), near the border with Luxembourg, 3 m. SW. of Trier (q.v.). It contains a celebrated obelisk, 75 ft high,

made of sandstone and decorated with reliefs, which is one of the most remarkable Rom. relics N. of the Alps; it was erected as a funeral monument of the Secundini family. Pop. 700.

Iggdrasil, see YGGDRASIL.

Iglau, see JIHLAVA.

Iglesias, tn in Sardinia (q.v.), 32 m. WNW. of Cagliari (q.v.). It has a 13th-cent. Romanesque-Gothic cathedral, and is the centre of an important mining dist. (*Iglesiente*): lead, zinc, silver, lignite, calamine, and galena are found. There is a school of mines. Pop. 24,000.

Iglesias de la Casa, José (1748-91), Sp. poet, b. in Salamanca. He first wrote satiric ballads, epigrams, and 'letrillas' directed against contemporary society and morals. He entered the Church in 1783, and his later works contained much theological discussion. I. is often ranked with Quevedo (1580-1645). His *Collected Poems* first appeared in 1798. See C. Real de la Riva, *Iglesias en Salamanca*, 1931.

Iglesiente, see IGLESIAS.

Igloo, Eskimo hut. Built for temporary habitation during the winter season, the huts are frequently constructed of blocks of ice piled high in a dome.

Igloodik, small is. of N. Canada, situated in the Arctic Ocean, in Fury and Hecla Strait, in lat. 69° 21' N. and long. 81° 53' W. It has a small Eskimo settlement and a Rom. Catholic mission.

Ignatius, Father (1837-1908), name, as a religious, of Joseph Leycester Lyne, an Englishman who devoted his life to an attempt to revive the Benedictine life in the Church of England. In 1870 he founded a community at Llanthony Abbey, near Abergavenny, but his attempt having been made without any reference to eccles. authority, it came to an end after his death, the property passing to the Benedictine community of Caldey, of which the greater number were received into the Rom. Catholic Church in 1913. F. I. was a great preacher, and his mission sermons in London attracted large numbers.

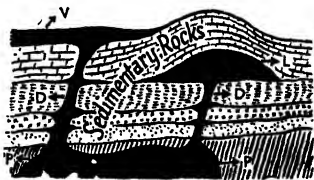
Ignatius de Loyola, see LOYOLA, IGNATIUS DE, and JESUITS.

Ignatius of Antioch, St. one of the Apostolic Fathers, perhaps the most remarkable Christian of the sub-Apostolic age. Of his birth and parentage we know nothing. A late tradition says that he was the little child whom Our Lord set in the midst of the disciples (Mark ix. 36). Earlier tradition described him as the disciple of St John the Apostle. Eusebius tells us that he was 2nd successor to St Peter in the see of Antioch. For the rest we can rely on the evidence of the letters which he sent from various cities at which he stopped on his way captive to Rome for martyrdom (AD 115-17), victim of a persecution at Antioch under Trajan. Three widely-different recensions of the letters exist. The *short* or *Vossian* recension contains 7 letters (the number which Eusebius ascribes to I.), to the Ephesians, Magnesians, Trallians, Romans, Philadelphians, Smyrneans, and

to Polycarp. The *long* recension expands these 7 and adds sev. others, 6 in Greek, 10 in Lat. (see APOSTOLIC CONSTRUCTIONS). Then there is the *Syriac* or *Cureltonian* recension, containing only 3 epistles, to the Romans, Ephesians, and Polycarp, all shortened. Scholars now endorse the *Vossian* recension. The letters are directed against Gnostic and Docetic heresy, and stress the duty of adherence to episcopal authority, and the essential nature of the episcopal office. They provide important evidence for the belief and organisation of the Church in its infancy. I. attests the presence of a bishop in every local church, with priests and deacons. The latter attend the bishop, the former administer church discipline with the bishop as chairman, but the bishop is distinct from them and has a monopoly of liturgical and sacramental authority and function. See J. B. Lightfoot, *Apostolic Fathers*, 1890; K. E. Kirk (ed.), *The Apostolic Ministry*, 1946.

Ignatius of Constantinople, St. (c. 800-878), son of Emperor Michael I, was compelled to enter a monastery, whence he rose to the patriarchate by favour of the Empress Theodora. He was an opponent of the iconoclasts. The influence of his brother Bardas, whom he had excommunicated, forced him to abdicate in 866, but he was restored in 867.

Igneous Rocks include all those which at some time in their hist. have been in a



molten condition. Their differing physical characters, which are largely dependent on their rate of cooling, suggest one form of classification into: (a) volcanic, in which the rate of cooling has been comparatively rapid, so that the crystallisation is by no means perfect, hence this kind contains large quantities of glassy or vitreous material; (b) plutonic, in which the cooling has been extremely slow, so that the crystallisation is almost perfect; hence there is little, if any, glassy material present. Between these two in nature there is seldom any strongly marked line of separation, for they merge into one another, and the dyke rocks may be defined as of the intermediate type. In the diagram, P represents the deep-seated plutonic rocks, D the intrusive dyke rocks, later in age than the rocks they penetrate, and forming dome-shaped laccoliths L in certain areas. V indicates the volcanic lavas, effusive or eruptive rocks. Examples of such lavas occur in the NW.

ters. of North America, in Iceland, the Faroe Is., the Deccan, Abyssinia, and fragments in Ireland and Scotland. Large shapeless masses (bosses) of plutonic rocks become exposed through the denudation of overlying rocks. These outstanding masses may be sev. m. in diameter. Other prominent rock-masses may be left by the weathering removal of surrounding material from the solidified lava in the neck of a volcano. Many such necks or cores remain, e.g. in Scotland, as relics of past volcanic activity. I. R. are chiefly composed of oxygen, silicon, aluminium, iron, calcium, magnesium, sodium, and potassium. A frequent classification of such rocks depends on their chemical composition and more particularly on the percentage of silica (SiO_2) present. A brief summary of such a grouping follows:

(1) *Acid igneous rocks*, containing from 66 to 80 per cent of silica. The plutonic example is granite, a holocrystalline rock containing the essential minerals quartz, feldspar, and mica (biotite or muscovite). The glassy, rapidly-cooled, volcanic representative is obsidian, which resembles bottle glass in appearance. The hemi-crystalline variety is called rhyolite. The two latter have roughly the same chemical composition as that of granite.

(2) *Alkali rocks*, containing from 60 to 66 per cent of silica and a high proportion of sodium or potassium. The essential constituents of these are orthoclase or sodic feldspar and hornblende, the latter of which may be replaced partly by augite or mica. Representatives in the same order as those of the first group are syenite, trachytic pumice, or trachyte glass, and trachyte. The trachytes bear much the same relation to the syenites that the rhyolites do to the granites.

(3) *Intermediate rocks*, containing from 55 to 65 per cent of silica. The essential mineral constituents are plagioclase feldspar (usually oligoclase or labradorite) and hornblende, which may be replaced by augite or mica as in the case of the syenites. Representatives in order are diorite, andesite glass, and andesites. The andesites occur in enormous masses in the Andes Mts.

(4) *Basic rocks*, containing from 45 to 55 per cent of silica, i.e. the acid-forming oxide is less in amount than the basic oxides. In this case the essential mineral constituents are plagioclase feldspar (usually labradorite or anorthite), augite, and olivine. Magnetite is always present as an accessory. Gabbro is the holocrystalline plutonic representative. The glassy example is tachylite or basalt glass while the hemi-crystalline rock is basalt. Dolerites are intermediate in texture between the gabbros and basalts.

(5) *Ultra-basic rocks*, containing a low percentage of silica and often no feldspar. Some varieties are rich in olivine, which readily decomposes and causes the rocks to change quickly into serpentines. Members of this class of ultra-basic rocks include Peridotites, Piorites, Lherzolites, and Dunites. Chemical analysis is, of course, impossible in the field, and in

practice, I. R. are commonly named according to their mineral composition and their texture.

Distribution of igneous rocks.—At the present day volcanic rocks are being produced most abundantly in a tract encircling the Pacific, in some Pacific is., in the Mediterranean regions, and in the African rift valleys. All these zones are, or have recently been, unstable, and many parts of them are still prone to earthquakes. Studies of older volcanic rocks show that the centres of volcanicity have shifted many times in geological hist., according to changes in the local condition of the crust. Plutonic rocks are only exposed when denudation has removed the rocks into which they were intruded. Some plutonic intrusions are found at the roots of old volcanoes. Many others, especially those of intermediate and acid composition, lie in the deep zones beneath old mt chains and were intruded during periods of strong disturbance of the crust.

Disintegration of igneous rocks.—Notwithstanding the hardness and compact character of these rocks, they are particularly subject to the weathering agencies. Chemical and mechanical analysis proves that all the materials building up the sedimentary rocks can be produced by the disintegration of the I. R., and, undoubtedly, many of the sedimentary rocks have been formed from such disintegration products.

Ignis Fatuus (Lat. 'foolish fire'), luminous appearance occasionally seen in marshy places and churchyards. It is usually visible shortly after sunset in autumn, and has been recorded in many countries. The light, which resembles a flame, is seldom pure white, and may be red, green, blue, or yellow. Accounts differ greatly; some observers speak of it as being fixed, and others as moving. It is believed to be due to the ignition of marsh gas (CH_4) which is sometimes found in the vicinity of decaying vegetable or animal matter. It is possible that a trace of hydrogen phosphide (P_2H_4) could cause the ignition of the marsh gas. Many local names are given to the phenomenon, e.g. Will-o'-the-Wisp, Jack-a-Lantern, etc., and its manifestations have given rise to a wealth of story and legend.

Ignoramus: 1. Word formerly written on a bill by a grand jury (see INDICTMENT; JURY) to signify that they 'ignored' the bill on the ground that there was not sufficient evidence to authorise them in finding a 'true bill.' Later they indorsed the bill in Eng. 'Not Found,' 'No Bill,' or with similar words.

2. Ignorant person; especially an ignorant pretender to knowledge. In this connection the word was probably an extension of its appropriate legal meaning. Many writers, notably Beaumont and Carlyle, are fond of using the word in a personified sense. Dryden in his *Duke of Guise* puns on the legal sense, thus: 'Let ignoramus juries find no traitors, and ignoramus poets scorable satires.' The idea of Dryden's satire

The Medal, which appeared in 1875, is said to have been suggested to by Charles II as a reply to the striking medal in honour of the I. of the grand og out a bill against laureate. . . . says a butt of the poet.

a legal maxim
it,
lawbreakers. This maxim is said to rest on the legal presumption that every man knows the law. It would be truer to say that grounds of public policy have dictated the necessity of adhering to such a maxim. I. of fact is different. For example, if a man, whose wife was living, left her and married another woman under the impression that it was lawful in certain circumstances to have 2 wives, he would be guilty of bigamy; but if he did so under the impression that his first wife was dead, he would in all probability be excused. There are, however, dicta to the effect that the rule is not universally applicable, at all events where no crime has been committed, or damage inflicted, and that a judge in a court of equity will be influenced by a plea of I.

Iguazú: 1. Former ter. of Brazil. In 1948 a belt of land around Brazil, part of sev. states, was taken over by the Federal Gov. and placed under the direct administration of the President. It had a pop. of 108,500, and faced the Misiones prov. of Argentina. It was restored in 1946 to its constituent states.

2. Falls of the same name, 2½ m. wide and with a sheer drop of 200 ft. on the Argentine-Brazilian border, 14 m. above the junction of the I. and Paraná rivs.

Iguazada, Sp. tn in the prov. of Barcelona, on the Noya, with a Baroque church containing a famous statue, the Christ of I. Pop. 10,500.



IGUANA

Iguana, genus of tropical Amer. lizards, of the family Iguanidae, comprising about 60 genera and 300 species. Nearly all the genera belong to the New World, occurring as far S. as Patagonia, and in a northward direction as far as California and

Brit. Columbia, and most of them are arboreal, though some live on the surface of the sand and stones of the desert. One of the most common species is the *Iguana tuberculata*, with a large and a high dorsal fringed ridge, prevailing colour is green, and greatly in size, from a few in. to sev. l. length. During the warm hrs they ba on the limbs of trees, when they are caught by the natives by means of a noose thrown over the head, their flesh being esteemed as food. To the same family belong the basilisk and the 'horned toad.' See H. F. Gadow, *Amphibia and Reptiles*, 1901.

Iguanodon (Gk *Iguana*, tooth), genus of bipedal ornithopod dinosaurs of the order Ornithischia found in Cretaceous rocks in Europe. I. was described by Mantell in 1825 from specimens found in Kent. It was from 15 to 25 ft long, with a large head, and the massive body terminating in a long and very strong tail. The forelimbs were small and adapted for grasping foliage. All the bones were hollow. The front parts of both upper and lower jaws were without teeth, and suggest a hollow, beak-like arrangement. Its forelimbs had 4 toes and a spur, and were much shorter than the 3-toed hind-limbs. Sev. species are known, mainly from the Wealden and Purbeck beds. A large number of fossil skeletons of I. were discovered in Cretaceous rocks occupying a fissure in Carboniferous rocks in a coal-mine at Bernisart, Belgium; a herd of these reptiles had probably fallen into the fissure and been buried there.

Iguvine Tables, see EUGUBINE.

Iguvium, see GUBBIO.

Ihering, Rudolf von, see JHERING.

I-ho T'uan, Chinese name for the Boxers (q.v.).

IJmuiden (Ymuiden), seaport in the prov. of N. Holland, Netherlands, 6 m. NNW. of Haarlem. It stands at the end of the North Sea Canal, connecting with Amsterdam, of which it is an outpost. This canal is one of the most important waterways of the Netherlands for transmarine traffic. There are fisheries and chemical industries. Pop. (with Velsen), 22,120.

IJssel, or **Yssel** (anot **Isala**): 1. Riv. of the Netherlands, the northernmost arm of the Rhine delta, leaving the mainstream near Arnhem and flowing N. into the IJsselmeer (Zuider Zee), 4 m. WNW. of Kampen. The upper part was originally a Rom. canal made (c. 12 BC) to unite the Rhine with the Oude IJssel, which joins the Nieuwe at Doesburg. Length about 70 m., all navigable.

2. Or **Hollandsche IJssel**, riv. of the Netherlands, branches off the R. Lek, connected by a canal at Utrecht with the Oude Rijn, and entering the Nieuwe Maas 2 m. E. of Rotterdam. Length 48 m., partly navigable.

IJsselmeer, freshwater lake in the Netherlands, separated from the North Sea by the Afsluitdijk (q.v.). Before the closing of the great dam (1932), the I., then called Zuider Zee, was directly



Netherlands Government Information Service

THE ISLAND OF URK

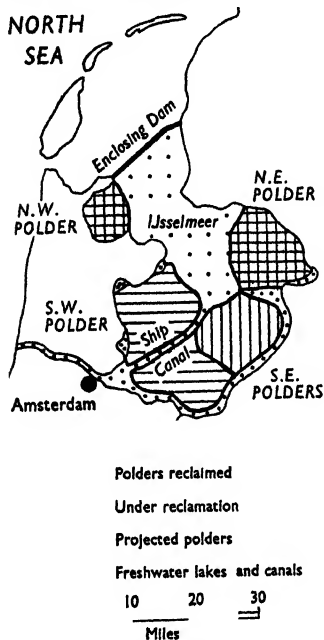
Above: before the reclamation of the NE. Polder

Below: just after the reclamation of the Polder, now surrounded by fertile land

connected with the North Sea and subject to tides. Vast areas of the I. have been reclaimed, including the NW., or Wieringermeer, Polder (50,000 ac., completed in 1930), and the NE. Polder (120,000 ac., completed in 1942), both being intensively cultivated. A scheme provides for 3 more polders, E. and S. Flevoland (SE. Polder, under construction since 1950), and Markerwaard (SW. Polder). After com-

pletion of the whole project (about 1980), the Netherlands will be increased by 546,000 ac. of arable land. An area of 309,000 ac. of the I. will not be reclaimed, but will serve as a freshwater reservoir. There will be a canal between the SE. and the SW. polders to connect Amsterdam with the IJsselmeer. *See also* ZUIDER ZEE; WIERINGEN; NORTH-EAST POLDER; LAND RECLAMATION.

IJsselmeer Dike, see **AFSLUITDIJK**.
IJsselmonde, or **Ysselmonde**, is. in the prov. of South Holland, Netherlands, between 2 branches of the Maas and the Oude and Nieuwe Maas, opposite Rotterdam. It is 15 m. long by 5 m. broad. There is a small tn of the name on the is. IJzer, see **YSER**.
Ikhmim, see **AKHMIM**.
Ikhmaton, see **AKHMATON**.



MAP OF THE ZUIDER ZEE WORKS

Iki, is. of Nagasaki, Japan, off the NW. coast of Kyushu. There are harbours at Gonoura (Mushozu), Tagawa, and Katsumoto. Area 57 sq. m.

Ikuno, tn of Hyogo, Japan, 35 m. NW. of Kobe. Its silver mines, the second in size in Japan, are worked by the gov.

Il, an administrative div. of Turkey. In 1921 the country was divided into 15 (now numbering 63), subdivided into *ilce*, and further into *Bucak*. Each *Il* has an elective council, and at its head a *Vali* representing the gov. The *Bucak* is an autonomous entity, the *ilce* being merely a grouping of these for some general administrative purposes.

Ilagan, cap. of the prov. of Isabela, Luzon, Philippine Is. It grows corn and rice. Pop. 35,384.

Iława (Ger. *Deutsch Eylau*), tn of Poland, in Olstyn prov., at the S. end of Lake Jeziorak, 40 m. WSW. of Olstyn (q.v.). Until 1945 it was in E. Prussia, and before the Second World War was a Ger. frontier station near the Polish border. Pop. 4000.

Iichester, vill. in the S. parl. div. of Somersetshire, England, on the R. Yeovil, 5 m. NW. of Yeovil and in the Yeovil parl. div. It is supposed to be the *Ischalls* of Ptolemy; was an important Rom. station and a flourishing Saxon tn. I. was the bp. (c. 1214) of Roger Bacon, the philosopher. Lytes Cary, a fine 14th-cent. house near I., is owned by the National Trust. Pop. 700.

Iichi, see **KHOTAN**.

Idefonso, St (607-67). Sp. prelate, b. at Toledo and a pupil of St Isidore, became abbot of Agall, and attended the 9th council of Toledo, 653. In 657 he succeeded his uncle Eugenius as archbishop of Toledo. He added 14 lives to St Isidore's *De Viris illustribus*, wrote sev. theological works, and was responsible for the unification of the Sp. liturgy.

Ille Amsterdam, see **TERRES AUSTRALIS ET ANTARCTIQUES FRANÇAISES**.

Ille Bourbon, see **RÉUNION**.

Ille-de-France: 1. Prov. of France, forming a kind of is. bounded by the R.s Seine, Marne, Beuvronne, Thève, and Oise, and with Paris as its cap. Under the Revolution redistribution of provs. it was divided into the dept of the Seine with the greater part of Seine-et-Oise, Seine-et-Marne, Oise, and Aisne, and a small part of Loiret and Nièvre. It is a prov. of forests and plains, fertile and prosperous, with carefully tended market gardens and orchards. Its prin. industries are wine and sugar beetroot. In the middle of the 9th cent. I. was made a dukedom and its 2nd duke, Odo (see **CARLOVINGIANS**), became king of France in 888, and was the ancestor of Hugh Capet (q.v.). I. was the former name of Mauritius (q.v.).

Ille-de-Paques, see **EASTER ISLAND**.

Ille-du-Diable, one of the *Îles du Salut* off the coast of Fr. Guiana (q.v.), South America, on which Capt. Dreyfus (q.v.) was imprisoned in 1894.

Ille St Paul, see **TERRES AUSTRALIS ET ANTARCTIQUES FRANÇAISES**.

Ilherda, see **LÉRIDA**.

Illes Crozet, see **TERRES AUSTRALIS ET ANTARCTIQUES FRANÇAISES**.

Illes de Kerguelen, see **TERRES AUSTRALIS ET ANTARCTIQUES FRANÇAISES**.

Ileum, lower part of the small intestine. The small intestine is a tube about 22 to 25 ft long; the first 10 or 11 in. form the duodenum, the next 8 to 9 ft form the jejunum, and the remainder is the I. There is no definite line of div. between the 2 main portions, but the jejunum occupies the upper and left part of the abdomen, while the I. occupies the lower and right. It terminates in the ileocaecal valve leading to the large intestine.

Ilex, cosmopolitan genus of plants in the family Aquifoliaceae, which consists

of between 100-200 species. *I. aquifolium*, the common holly, is found in Europe, North Africa, and W. Asia, and has many varieties; *I. cornuta*, the horned and *I. pernyi* are hardy Chinese for gardens. *I. paraguayensis*, Brazil, provides the leaves from which Paraguay maté, or yerba tea is brewed. *I. geniculata*, Japan, and *I. verticillata*, North America, are ornamental deciduous hollies. The *I.* of classical authors is *Quercus ilex*, the holm oak.

Ilford: 1. Municipal bor. on the Roding in SW. Essex, England, 7 m. ENE. of London. The hospital of St Mary and St Thomas, originally founded in the 12th cent. as a leper hospital, is now composed of almshouses and a chapel. *I.* has

fishing, but there are saltworks and glass and porcelain works near by. Pop. 6200.

Ill: one of the chief rvs. of Soviet Central Asia in the Issyk-kul Region of the Kirgiz S.S.R. It rises at an altitude of 11,600 ft on the W. slopes of Mt Kashkatur, E. of Lake Issyk-kul, and flows in a twisted course past Kulja in Sinkiang, through the Trans-Ili, Ala-tau, and Borokhoro Mts to the tn of *I.*, and thence to Lake Balkash, into which it falls by 7 mouths, after a total course of 750 m. Its chief tribs. are the Kash, Chilik, and Charyn. Its valley is rich in coal, gold, and silver. See also KULJA.

Ilad, see EPIC; HOMER.

Iliamna, active volcano in Alaska, North America, at the head of the Alaska



British Railways

ILFRACOMBE

photographic material and scientific instrument factories. Pop. 181,200.

2. Little *I.*, on the opposite bank of the R. Roding from Ilford, in the co. bor. of East Ham, Essex, England. Pop. 15,000.

Ilfracombe, seaport, mrkt tn, and popular watering-place in N. Devon, England, 11 m. NNW. of Barnstaple. The beauty of its scenery and the temperate climate make it a favourite resort both in winter and summer. It has steadily grown in importance of late years and constant improvements have been made. A new pier has been built, a zoo opened, and attractive public gardens planted. In the 14th cent. it was a place of importance and supplied 6 ships and 96 men for the siege of Calais (1347). It was besieged twice during the Civil war. In 1782 a large treasure vessel belonging to the Franco-Sp. fleet taken by Rodney was wrecked in Rapparee Cove, and at various times since gold and silver pieces have been washed ashore. In 1797 4 Fr. ships entered the harbour and sank all the vessels lying there. *I.* has declined as a port since its prosperous days in the 14th cent. Pop. 9218.

Ilhavo, tn of Portugal, in Aveiro dist., near the Aveiro lagoon, 3 m. SSW. of Aveiro (q.v.). The chief industry is

Peninsula, W. of Cook Inlet. It was in eruption in 1901 and 1902. Altitude 10,000 ft.

Ilci, see ELCHÉ.

Iligan Bay, on the N. coast of Mindanao, Philippine Is. The R. Iligan flows into it at the SE. corner, and here lies the tn of Iligan. Corn and rice are grown. Pop. 25,725.

Iissus, small riv. of Attica, rising on the N. slope of Mt Hymettus and flowing into the sea near the Piræus. It was immortalised for its beauty by Plato in *Phædrus*, but the beauty has vanished and the scenery become barren and sun-scorched.

Ilithyia, see EILITHYIA.

Ilium, see TROY.

Ilkeston, municipal bor. and mrkt tn of Derbyshire, England, 9½ m. ENE. of Derby, on high ground above the Erewash Valley. There is a variety of light and heavy industries, including coal-mining, hosiery, textiles, lace, engineering, iron and concrete products, and plastics. Pop. 34,210.

Ilkley, health resort and urb. dist. in the W. Riding of Yorks, England, on the R. Wharfe, 16 m. NW. of Leeds. There are sev. hydropathic estab. It was a Rom. station and possesses 3 curious Saxon

crosses. Here are White Wells (former Rom. baths), and the world-famous I. Moor. I. is a favourite centre for touring the Yorks Dales. Bolton Abbey (q.v.) is 5 m. NW. Pop. (of tn) 10,440; (of dist.) 17,284.

Illampu, or **Sorata**, peak in the Cordillera Real, Bolivia. Altitude 21,275 ft.

Illawarra, dist. of New South Wales, Australia, extending from a point 33 m. S. of Sydney along the coast southwards for 40 m. to Shoalhaven. Wollongong is the chief tn. Industries: dairy produce, collieries.

Illawlaest, celebrated glacier in Brit. Columbia, lying near Glacier House, on the Canadian Pacific Railway, having its origin in the snows and ice of Sir Donald Mt. It is in a condition of recession.

Ille-et-Vilaine, maritime dept of NW. France, bordering Mt St Michel Bay and

unmarried parents under specified conditions (*see further under* LEGITIMACY; LEGITIMATION).

The greater the number of artificial hindrances to marriage, whether economic or social, the greater, as a rule, will be the I. In some countries, like France, the term of military service must be completed before a man may marry. Again, in some legal systems a marriage would be illegal where the spouses had not first obtained the consent of their parents; while in France the dowry system, tending as it does to the *mariage de convenance*, tends equally surely to irregular unions. Some have supposed that I. is more rampant among the hot-blooded races of the S. of Europe and South America, or in other warm climates. But there is little statistical warranty for the assumption, although, so far as mere

UNITED KINGDOM (figures to nearest 1000)

Year	Total Live Births	Legitimate	Illegitimate	Percentage of Illegitimate
1935	711,000	679,000	32,000	4.5
1940	702,000	670,000	32,000	4.6
1945	796,000	723,000	73,000	9.1
1950	818,000	777,000	41,000	5.0
1955	789,000	751,000	38,000	4.6

the Eng. Channel. It formed part of the old prov. of Brittany, and is now bounded W. by the depts of Côtes-du-Nord and Morbihan, S. by Loire-Inférieure, E. and NE. by Mayenne and Manche. The R.s Ille and Vilaine flow from N. and E., uniting at Rennes, the cap. The surface is mostly flat, with forests and marshes in the N. The former forest of Brocéliande in the W. is now represented by the far less extensive forest of Paimpont. The Marsh of Dol is a fertile region once engulfed by the sea. Grain (wheat and barley), tobacco, flax, and potatoes are among the chief crops. Honey, and fruit are plentiful: cider is produced, the amount being equal to nearly 20 per cent of the total Fr. production. The oysters of Cancale are exported, and there are active fishing-grounds off the coast. The prin. industries are footwear (Fougères) and leatherwork (Rennes). The chief minerals are granite (round Fougères), slate and argentiferous galena at Bruz. St Servan and St Malo are the chief ports. Area 2697 sq. m.; pop. 578,200.

Illegitimacy, status of a child b. out of wedlock. The status is especially important in all legal systems from the consequences entailed by it in regard to the right to succeed to property. Bastardy in England and Wales has, however, lost much of the stigma traditionally attached to it by reason of the Legitimacy Act, 1926, which legitimates the offspring of

figures are concerned, 2 observations are material. First, that in most of those countries whose legal systems are based upon the Civil Law (q.v.), subsequent marriage, or even a less formal act, will legitimate offspring otherwise illegitimate; and, secondly, statistics of any reliable kind are not forthcoming for the majority of Oriental races.

In the census period 1871-1901 the percentage of illegitimates in the U.K. was 5.6, and in Scotland, 9.5. For the succeeding census periods these rates have averaged 4.4 and 7.3 respectively. The U.K. figures for recent years in which statistics are available are shown above.

In Christian nations there can be no doubt that the Christian religion acts powerfully as a deterrent of I. (e.g. in Ireland, where the rate as long ago as 1870 was only 2.7) and that chastity is intimately involved in the age-long institution of monogamy. Whether religion or utilitarian motives have had more to do with the difference between the status of legitimate and illegitimate offspring is open to doubt. Most Aryan nations acknowledged illegitimate children as part of their families, and gave them a right to share in the patrimony, though in the Rom. law of succession illegitimate children were in a less favourable position in this respect than legitimate. According to Westernmark (*Origin and Development of the Moral Ideas*), it was nothing less than

monogamy that gradually deprived the bastard of nearly all proprietary rights, and led up to the universal maxim that the bastard was *filius nullius aut filius populi* (the son of no man, or the son of the people). Christianity may well have done no more than throw the aegis of religion over what had long been a social commonplace; but the stigma it attached to infidelity to the marriage vow, and its doctrine that monogamous marriage was the only form of marriage that could exculpate intercourse, may well have gone far to stereotype the unenviable position of the bastard. Although eccles. ideas of marriage and legitimacy were slow in permeating the ruder Celtic nations, they soon induced the A.-S. law-giver to deny to the bastard any claim of blood relationship with the *Maegh* or family. Some have even attributed the curious custom of Bor.-Eng. (q.v.) to the doubts that were supposed to surround the birth of older children. The loss of social caste does not seem to have attached to the degradation of status incident to I. until somewhat later. Some medieval heroes of aristocratic if spurious birth appear to have prided themselves on their title of 'bastard.' The Conqueror was known as Wm the Bastard, without any connotation of shame, but rather as a distinctive appellation. But apart from exceptional instances, social inferiority gradually followed as a necessary corollary to deprivation of proprietary rights.

From an examination of the ann. reports of the Registrar of Births and Deaths, it will be found that in England the percentage of illegitimate births is comparatively high in the E. cos. of Suffolk, Norfolk, and Lincs. It may be taken generally that the percentage is higher in agric. areas than in industrial cos.

See also LEGITIMATION. See *Annual Reports of Registrar of Births and Deaths; International Health Book of League of Nations.*

Illicium, Anise Trees, a genus of evergreen shrubs, family Magnoliaceae, from Asia and S. U.S.A. *I. anisatum* and *I. floridanum* require mild conditions, *I. verum*, the star anise of China, a warm greenhouse.

Illimani, 21,200 ft., one of the loftiest mts in the Andes. It is part of the E. Cordillera, S. of La Paz, Bolivia.

Illinium, supposed metal (atomic number 61) of the rare earth group. Its substance is still doubtful.

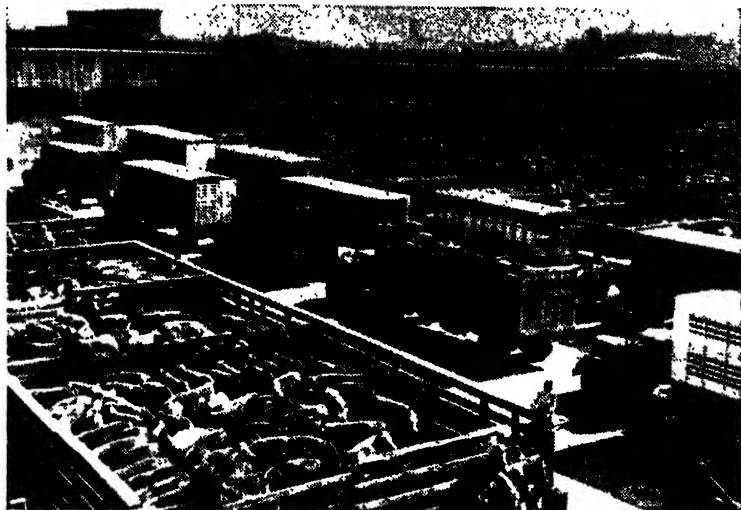
Illinois: 1. (*Illini*, men) Group of North Amer. Indian tribes of the Algonquin linguistic family. They lived formerly in I. and the adjacent parts of Wisconsin, Iowa, and Missouri. The chief tribes were Cahokia, Peoria, Kaskaskia, Tamaroa, Michigamea, and Moingwena. As allies of the Fr. they came into conflict with the Iroquois (1678). They now number under 200, and are situated on a reservation in NE. Oklahoma. See J. B. La Salle's account of his explorations, 1670-82; G. Catlin, *North American Indians*, 1842.

2. Riv. of U.S.A., formed by the union of the Kankakee and Des Plaines R.s in Grundy co., I. It flows 273 m. S. and SW., entering the Mississippi about 20 m. above Alton. It is a link in the I. Waterway (including canals, 325 m. long) between Chicago and the Mississippi R.

3. A N. central state of the U.S.A., known as 'the Prairie State,' in the valley of the Mississippi and the basin of the Great Lakes. It is bounded N. by Wisconsin, E. by Lake Michigan and Indiana, S. by Kentucky, SW. by Missouri, W. by Missouri and Iowa. The Mississippi R. is on the W., the Ohio on the S., and the Wabash partly on the E. The surface is a vast plain, with an average elevation of 500 ft., sloping slightly towards the S. and SW. The lowest point (279 ft above sea-level) is on the Mississippi near Cairo; Charles Mt., near Galena, is the highest (1241 ft). The low, fertile plateau in the S. near Cairo is popularly known as Egypt. The I. is the chief riv., and there are saline, sulphur, and chalybeate springs in the S. The I. and Michigan Canal was opened in 1848, connecting Lake Michigan with the Mississippi; it has become a part of the I. Waterway. There is a difference of about 11° F. in the temps. of N. and S. The soil is very fertile, but an underlying stratum of clay, which retains the rainfall, necessitates elaborate drainage systems. Trees have been extensively planted, and I. ranks next to Iowa as an agric. state. Maize, wheat, soybeans, and hay are grown. Apples, pears, and peaches are much cultivated, particularly in the hilly belt of the S. Here cotton is also grown successfully. There are good vineyards, the centre of the liquor industry being Peoria. Livestock are reared and fine dairy produce is obtained. Slaughtering and meat-packing is a most important industry, centred at Chicago. Fishing is also carried on extensively, pike, bass, salmon-trout, carp, sturgeon, and paddlefish being plentiful in the rivs. and lakes. Bituminous coal is the chief mineral, the coal-field covering about 37,500 sq. m. In 1951 the coal output was 54,200,000 tons. Petroleum, natural gas, sandstone, and limestone are also valuable. Building-stone is quarried chiefly in Monroe, Lawrence, and Decatur cos. Zinc, fluor-spar, limestone, clay, gypsum, and marble are found. I. ranks 7th in mineral output in the U.S.A. The last figures on agriculture show that in 1953 the chief cereal crops were: maize, 500,472,000 bushels; wheat, 56,781,000 bushels; oats, 115,070,000 bushels; barley and rye are also grown. The output of soybeans at 76,896,000 bushels led all other states. Soap, candles, and pottery are among the chief manufs. I. ranks as the 4th manufacturing state in America, giving precedence only to New York, Ohio, and Pennsylvania. Some of the most important tns are Chicago, 3,621,000; Springfield (state cap.), 81,600; Peoria, 111,900; Rockford, 92,900; E. St. Louis, 82,300; Evanston, 73,600; Cicero, 67,500; Decatur, 66,300; Oak Park, 63,500;

Joliet, 51,600; Berwyn, 51,300; and Aurora, 50,600; other tns are Quincy, Galesburg, Jacksonville, Freeport, La Salle, and Ottawa. There are 102 cos. Communication is excellent both by rail and water. There are 11,600 m. of railroad track in use. The railway transport is the greatest in the U.S.A., and Chicago is the largest railway centre in the world. The transport by rail is so cheap that it has brought down the freightage cost on the Ohio and the Mississippi. The I. and St. Louis (1837) was the first railway

was admitted to the Union. The Mormon troubles in I. terminated, 1840-4. The present constitution was adopted in 1870. There is a senate of 51 members, and a house of representatives of 153 members, elected for 4 and 2 years respectively. Twenty-six representatives are sent to the Lower House of the Federal Congress. See I. F. Mather, *The Making of Illinois*, 1900, revised ed. 1931; Illinois Centennial Commission, *Centennial History of Illinois*, 5 vols., 1919-20; W. F. and S. Dodd, *Government in Illinois*, 1923; E. F. Dunne,



U.S. Information Service, American Embassy

CHICAGO STOCKYARDS, ILLINOIS

These stockyards form the largest unit in the world for the marketing of livestock and the processing of meat

opened. Northwestern Univ. at Evanston was founded in 1851. The univ. of I., founded in 1868, is at Urbana and Chicago; the univ. of Chicago was founded in 1890. There are many other fine educational institutions in I., including the I. Institute of Technology at Chicago. The area is 56,400 sq. m. (including 465 sq. m. of water). Pop. 8,712,176.

History and constitution.—In 1673 Joliet explored I., and in 1703 Jesuit missionaries estab. a settlement mission among the Kaskaskia Indians. La Salle (q.v.) gave the state its present name (1679), from the Indian confederacy there, and built Fort Crèvecoeur. Tonty continued his explorations. Fr. traders settled in I., 1683-90. In 1763 I. passed to England on the cession of Canada. It became part of the U.S. NW. Ter. in 1787, and of Indiana Ter. in 1800. In 1818 it

Illinois: the Heart of the Nation, 5 vols., 1933; D. C. Peattie, *A Prairie Grove*, 1938; Federal Writers' Project, *Illinois: a Descriptive and Historical Guide*, 1947.

Illinois, University of, state institution founded under the federal Land Grant Act in 1867 at Urbana, Illinois, U.S.A. At Urbana are the colleges of liberal arts and sciences, agriculture, veterinary medicine, commerce and business administration, education, engineering, fine and applied arts, and law, the institute of aviation, the library school, and the schools of journalism and communications, physical education, and social work. At Chicago are the colleges of medicine, dentistry, and pharmacy. The univ. library contained 2,800,000 vols. in 1955. Teaching staff, 4676; students, 25,200. Illinois College, at Jacksonville, Illinois, is a separate institution.

Illiteracy usually refers to the number

or percentage of persons who are unable to read or write. Immediately after the Second World War it was estimated that half the world's pop. was illiterate. It is extremely difficult to obtain reliable comparative figures since the criteria of I. vary considerably from country to country or from state to state within a country. Data are difficult to obtain since there are few means of compelling people to disclose evidence of I. An illustration of both difficulties is found in the tests applied to millions of immigrants who entered the U.S.A. at the turn of the century. They were asked if they could read or write in any language. If they said 'Yes' they were marked as literate. A further complication is that ability to read is often regarded as a mark of literacy even if the person cannot write. Surveys have, however, been carried out on the basis of general educational development. In N. Europe I. was found to be virtually nil, although in the U.K. the examination of army recruits during the Second World War revealed a high degree (20 per cent) of semi-literacy. In S. European countries (Italy, Spain, Portugal) the figure is higher, rising perhaps in some areas to over 50 per cent. In North America, with the possible exception of some parts of the negro S., and in Australia, New Zealand, and white South Africa, the position is comparable to that in N. Europe. The area with the next lowest I. figures is Lat. America. Of these countries Argentina, with a pop. almost wholly composed of European immigrants, has an estimated I. of 13 per cent. That of Bolivia is estimated at 80 per cent. Throughout Asia as a whole, with the exception of Japan, the figures are very high, and in the region of 80 per cent. I. varies as between urb. and rural communities—wherever the latter predominate and the people pursue agriculture, the I. is high. Africa has the highest I. of all the continents. Where some kind of census is possible the I. rate among coloured Africans is as high as 98 per cent. Egypt's figure was recently of the order of 90 per cent.

Everywhere great attempts are being made to reduce the figures. The rapidity with which the literacy rates were raised in the Pacific Is. during the 19th cent. through the work of missionaries, and in Japan after the Meiji Restoration (1868), gives rise to hopes that many countries will succeed in the near future in achieving one of the first aims of their educational policy—the radical reduction of I. (see MASS EDUCATION). The problems associated with the achievement of this aim are difficult. Suitable teachers have to be trained and suitable textbooks provided. If reading and writing are not used constantly a person soon relapses into I. In areas where a language is spoken by only a handful of people, the choice between making them literate in their mother tongue or in a world language has to be faced. Other countries, for example China, face considerable linguistic difficulties. There the most

widely spoken language, with dialectical variations, is Mandarin or 'official speech,' while the literary language is spoken by no one. Another problem is a difficult script. The full range of characters in Mandarin is enormous—even on a typewriter there are some 5400 types—and the minimum list prepared by the Ministry of Education for the first 4 grades of school was 3000. In Turkish educational reform under Kemal a new alphabet was adopted. In India attempts are being made to have Hindi as the national language, but instruction is at first in the mother tongue. Despite all these difficulties great advances have been made in reducing I. throughout the world through the schools and adult education. See U.N.E.S.C.O., *Fundamental Education*, 1947, and *The Teaching of Reading and Writing*, 1956.

Ilkirch-Graffenstaden, Fr. tn in the dept of Bas-Rhin, 5 m. S. of Strasburg. It has mechanical and electrical manufs. Pop. 7700.

Iltyd, St, Celtic disciple of Sts Dyfrig and Cadoc, founded the abbey of Llantwit Major, South Wales. He is said to have d. in Brittany c. 530, where his relics are venerated at Landebaeron, near Dol. His feast is on 6 Nov. See S. Baring-Gould and J. Fisher, *Lives of the British Saints*, 1908.

Illuminati, enlightened ones, the name assumed at various times by religious sects and secret societies. The Sp. 'illuminati' (*aluminados*) seem to have been in origin akin to the various Gnostic heretics who fl. in the early Middle Ages, though their appearance in Spain is later. They were suppressed by the Inquisition during the 16th cent.; they also estab. themselves in Picardy and elsewhere in France during the 17th, and lasted in isolated bodies till the end of the 18th. The Rosicrucian I. are quite distinct; their tenets are mixed with alchemy and occultism (see ROSICRUCIANS). Finally, in 1776 a secret masonic society with republican and free-thinking views was formed by Adam Weishaupt, prof. of Canon Law at Ingolstadt, Bavaria, who had been educ. by the Jesuits, but became a freethinker. It was anti-Jesuit, and was suppressed in 1785.

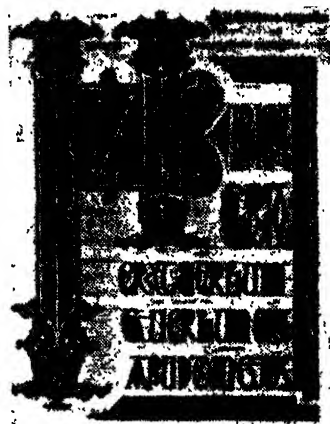
Illumination, or Illuminism, term used in connection with the 'Enlightenment' period of philosophy. Scientific reason, or the appeal to reason as opposed to the reliance on external authority, marked the metaphysical systems from Descartes to Leibnitz. The evolution of existing beliefs and institutions was completely ignored and their value denied, save in so far as they were consistent with abstract principles set up by the rationalists as the ultimate criterion of truth. With the rationalists the pure reason became opposed to all emotions and enthusiasms which failed to satisfy its dogmatic tests, and the net result of rationalist inquiry was the truly barren substitution of a natural deism for revealed religion of all kinds. This sterile and unimaginative philosophy was paradoxically, as it must

seem to us, known as the Enlightenment; but the success that the scepticism of many thinkers might well have had in confounding the principle of pure *a priori* reason was checked for a time by the remarkable progress of science. It was the shifting of metaphysical inquiry from the exclusive ground of deism to the analysis of knowledge that eventually sounded the death-knell of rationalism. Locke taught that knowledge was wholly empirical, and denied the existence of those innate ideas of reason upon which the rationalists had consciously or unconsciously rested their theories; and later Rousseau's emotional polemics swung back the pendulum in favour of the feelings as against the intellect in the realms of speculative inquiry. Before the period of the Enlightenment had closed, and long before Rousseau, Spinoza had checked the tendency of rationalism to remove God to the position of a mere far-off observer and entirely unrelated to the mundane by his insistence as a religious and ethical requirement on the essential unity of things. Voltaire introduced the results of the Eng. Enlightenment into France, and the Fr. Enlightenment took the form of a thoroughgoing materialism in which truth and religion were diametrically opposed. Within this circle flamed the light of Rousseau, who, beginning as an Encyclopédiste of the Fr. Enlightenment, ended by being bitterly hostile to the whole principle of the rationalists, which, in its apotheosis of the logical reason and condemnation of mysticism, attained the conception of man as a self-centred unit entirely independent of the arbitrary environment in which he found himself.

The cardinal fact in the Enlightenment was individualism and its corollary, the assumption that institutions could be cast off at will and a fresh start made. It ignored the fact that all institutions have their roots in the depths of time, and, though this assumption was eminently favourable to the aims of the leaders of the Fr. Revolution, Rousseau's doctrines, however unconsciously they may be susceptible of bare expression in terms of rationalism, departed from rationalism in that they denied the value to human welfare of all the sciences. Later it was the Ger. empiricism begun by Lessing and Herder, and continued in the idealism of Hegel, Kant, and others, that swept the so-called Enlightenment from the field of philosophy. Rousseau's demand for a return to nature ignored the social life in a way inconsistent with practical experience, and even with his own maturer views. The Ger. philosophy also claimed the realisation of the abstract freedom of man, but, in the endeavour to find again the value of the inner life of the individual, insisted on shaping that freedom in forms of real worth and beauty, in some ways commensurate with the obvious potentialities of life and feeling. With the earlier Ger. empiricists God ceases to be a cold intellectual abstraction, and is regarded as immanent in nature, human affairs, and all spiritual experience. The

smallness of the ambit of reason finds expression in Kant's transcendentalism, which looks upon it as an instrument utterly useless to fathom the realities of God and the soul. Perhaps Kant's critical philosophy is the last word on the subject, when it denies the claims of rationalism to comprehend reality on the ground that thought and the material of sense are indissolubly connected, and that no sense-experience can possibly be an ultimate reality. See L. Brunschwig, *Spinoza and his Contemporaries*, 1923; L. Roth, *Spinoza, Descartes, and Maimonides*, 1924; G. D. Hicks, *Critical Realism*, 1938.

Illumination of Manuscripts. The art of embellishing MSS. either by pictorial



British Museum

A PAGE FROM THE LINDISFARNE
GOSPELS

ornamentation or with decorated letters and designs in gold and colours was much practised in the Middle Ages, and especially applied to devotional works. The art appears to have been evolved from the classical methods of decorating or illustrating the books of the 2nd and 3rd cents. with pictures either in outline or with gilt shading to enhance the light effects, and intended to represent scenes spoken of in the text; through the florid Byzantine art of adorning MSS. of the Gospels with brilliantly painted ornamental designs, gilt or silver lettering, and finely executed miniatures enhanced by highly gilt backgrounds; to the ornamentation of the Franco-Lombards of the so-called Carolingian school, the characteristics of which were a liberal use of gold and large and profusely embellished initial letters on most of the pages. A fragmentary copy of the *Itad* on vellum, now in the Ambrosian Library at Milan, is said

to be the earliest extant example of an illuminated MS. Its sobriety of decoration is in striking contrast with the brilliant miniatures (a technical term from Lat. *minio*, to colour with red lead, meaning a picture in an illuminated MS. and not a 'small portrait') of such MSS. as the homilies of Chrysostom and various fragments of the Eusebian canons to be seen in the Brit. Museum. The faults in the Byzantine art appear to be that, while the inherited Oriental splendour of colouring in gold and vermilion gave character to the general scheme of decoration, the drawings themselves, or miniatures, though classical in style, are not only dull and flat in colouring, but the whole form of the figures of the saints or other personages represented is constrained and unprepossessing. The reaction set in with the development of the art in Italy in the 9th and 10th cents., and later in the Frankish empire. The Carolingian or Frankish art owed its attractiveness largely to the independent Celtic element originating in Ireland. The Irish art dispensed almost entirely with the use of gold, and relied for its effect on its designs and borders of intertwined ribbons, tangled knots, and intricate patterns and spirals, and legendary animals, the whole being executed with marvellous precision and minuteness. The *Book of Kells* (q.v.) in Trinity College, Dublin, is the finest extant early example. The celebrated Lindisfarne Gospels (q.v.) in the Cotton Collection in the Brit. Museum are examples of the Celtic style, though these were really productions of Scottish monastic settlements. The colouring of the Celtic style is less bizarre than the Byzantine, but the drawing of figures and objects is crude probably because, being native-born, it proceeded independently of all classical models. The Franco-Lombard art combined the best elements of the Celtic and Byzantine; a return was here made to the abundant use of gold. The pure ornament outweighs the illustrations or miniatures, which latter, as before, generally relate to scenes or characters from the Gospels, and are executed in free-hand in the later Rom. or so-called 'debased classical' style. Examples of Carolingian art are Lothair's Gospels, Charles the Bald's bible, and an evangelarium among the Brit. Museum Harleyan MSS. A radical change came over the art of illumination at the end of the 12th cent., and the conventional style then elaborated subsisted for something like 300 years. Almost the chief feature of bibles of this period is the border, which generally takes the form of a frame of fanciful foliage or other device. Greater prominence is given to the characters or MS. itself during this period, and in consequence the double-column pages are occupied mainly with the closely written characters, the 'miniatures' having become nothing more than large initials containing in actual miniature a pictorial representation of some act or scene relating to the corresponding text. Numerous examples may be found in the small bibles

of the period. By the 14th cent. greater skill had been attained, not only in the more agreeable delineation of the human form, but in the representation of ornamental foliage. Scenery begins to appear, and the stiff and even grotesque contortions of the Byzantine figures yield to a free and dramatic arrangement or grouping, while the tawdry gold background disappears altogether. Skill in realistic drawing, however, tended to the destruction of illumination as an art in itself, and from the perfection attained in the Middle Ages the decorative execution declined to a style characterised by miniatures treated with admirable skill, bordered with gold, and interspersed with cleverly painted flowers and insects, while the text assumes a place of merely secondary importance. One of the best examples of 15th-cent. illumination is the *Bedford Book of Hours*, now in the Brit. Museum, and another famous work of this period is *Les Très Riches Heures du Duc de Berry* (Musée Condé, Chantilly) with excellent paintings of landscape and figures, attributed to the brothers Limbourg. With the Renaissance and the return to classic models the art of illumination attained its zenith in minute delicacy of colouring and perfection of drawing, and, furthermore, an official recognition by both the republican princes and the various popes and dukes. Ultimately, however, it was the invention of printing that destroyed the art and reduced it to the mere pastime of painting miniatures in spaces left for the purpose, rather by way of subsequent adornment than as an art in itself.

The Brit. Museum has no true classical illumination, the few surviving specimens of which must, according to Dr Arundell Esdalle, be sought in Italy; while the remains of the Cotton Genesis, 5th or 6th cent., belong to the Byzantine School. But 'in work of all the later schools, down to the decay of the art upon the rise of printing, the museum is abundantly rich, not only by grace of the foundation collections, but by gifts, bequests, etc.' Fine examples of the Eng. school of I. of M. recently acquired include: *The Apocalypse of the Abbey of Abingdon*, 13th cent., acquired in 1931; *The Psalter of the Abbey of Evesham*, 13th cent., purchased and presented in 1936 by the National Art Collections Fund; *The M. R. James Psalter*, 14th cent., written for use in Durham diocese, and presented in 1937; *The Luttrell Psalter* (q.v.), acquired in 1929; *The Bedford Hours and Psalter*, a book by an Eng. artist and not to be confounded with the more famous Hours (Add. MS. 18856) also executed for John, duke of Bedford, and of Fr. workmanship. 'It is,' says Dr Esdalle, 'one of the finest examples of the school which arose and flourished for a time after the Black Death and was the end of English illumination; and it is unique in containing over 300 exquisite miniature heads, which may be portraits.' The Museum secured it, when auctioned, for £33,000 (see A. Esdalle, *The British Museum Library*, 1946). See also MANUSCRIPTS.

See F. Delamotte, *Primer of the Art of Illumination*, 1860; W. Tyrnams and M. Wyatt, *Art of Illuminating*, 1860; H. Shaw, *Handbook of the Art of Illumination as practised in the Middle Ages*, 1886;

graphy of Anatomic Illustrations, 1920; S. Farnworth, *Illumination and its development in the Present Day*, 1922; F. Jacobi, *Deutsche Buchmalerei in ihrem stilistischen Entwicklungsphasen*, 1923; E. Millar, *English Illuminated Manuscript*, 1928; A. Melther, *Catalogue of Illuminated Manuscripts*, 1937.

Illuminism, see ILLUMINATION.

Illusion, term applied to the wrong interpretation of a sensory object, as, for example, when in a poor light a coal-box is mistaken for a black cat. The term is loosely applied to both delusion (q.v.) and hallucination (q.v.).

'**Illustrated London News**,' founded by a printer and newsagent of Nottingham, Herbert Ingram, and generally acknowledged to be the first illustrated newspaper. The first number was brought out in May 1842, and among the earlier of its artists were John Gilbert, John Leach, and Birkett Foster. It deals with current topics of national and international interest, illustrated by photographs and drawings, and is pub. weekly.

Illustration is as old as art itself. Two or 3 thousand years before Christ, and earlier still, the Egyptians adorned the walls of sepulchral chambers and the pillars of temples with the exploits of their kings, and the Assyrians told the story of their great wars and sieges on the friezes of their monuments; but in the modern sense I. may be defined as the pictorial presentation of an idea expounded in an accompanying text. It is thus an accessory to the printed word, although in the hands of a skilful artist the two may often be aesthetically indivisible. This article attempts to deal only with book I. (For the medieval illuminated MSS. see ILLUMINATION OF MANUSCRIPTS.)

The earliest I.s were block prints, such as the *St Christopher*, 1423, which were usually of religious subjects and which made their first appearance in Europe at about the same time as the invention of printing, although probably independently of it. These blocks were woodcuts, having the design cut with a knife in relief on the plank surface of a soft wood. Any accompanying text was also cut in the same block. At a later date the prints were pasted together to form books, a few of which are still extant, notably the *Biblia Pauperum*, c. 1465. One of the earliest books printed from movable type to contain woodcut I.s was Aldus's *Hyperotomachia Polifili*, 1499 (see HYPNEROTOMACHIA). Soon afterwards Botticelli made his admirable designs for Dante's *Divina Commedia*. Broadly speaking, I. experienced the same ups and downs as painting, and whenever an important school of the greater art arose then, too, the lesser art fl. Thus the Italians Pollajuolo and Man-

tegna not only painted but executed a number of excellent line engravings. In Germany, Dürer and the younger Holbein exploited the method, and the latter's book *Dance of Death* is his most notable work in this field. In France, fine woodcuts were made for Books of Hours at the end of the 15th cent.

Copper was first used for engraving about 1477 but the method was not introduced into England until about 1540, when it gradually superseded woodcuts. Unlike the latter it is an intaglio process. The design is cut with a burin, or graver, on to a polished copper plate which is then



HANS HOLBEIN THE YOUNGER

'Death of the Duchess' from *The Dance of Death*, 1538

inked over and the surface wiped clean, leaving the ink in the recessed incisions. Under pressure the ink is transferred from the plate to paper. Fine detail may be reproduced by this method, and it was widely practised by famous artists for book I. up to the 19th cent., notably by the school of Rembrandt in Holland, and of Watteau and Fragonard in France, and later by Hogarth and Reynolds. The aquatint, also an intaglio process but capable of suggesting tonal variation, was used by Rowlandson to great effect in his *English Dance of Death*, 1816, and *Tours of Doctor Syntax*, 1812. The drawing was done by the artist himself and the prints from it were then hand-coloured by professional colourists.

Etching, another important intaglio process, allows greater freedom than engraving. The surface of a metal plate is made acid-resistant by covering with wax which is then worked over with a needle to open up the surface of the copper. It is

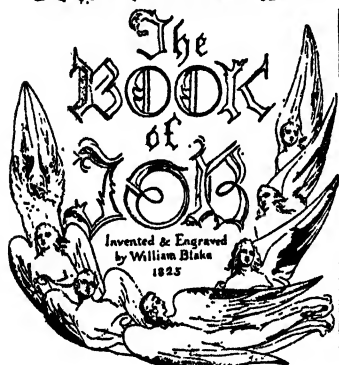
next etched in acid and may be controlled to produce varying depths of line which will hold more or less ink. Wm Blake adapted the process to his own ends for his *Illustrations of the Book of Job*, 1825, by etching in reverse so that the design was printed in relief, as in a woodcut. Cruikshank used it as the medium for a large part of his enormous output, and in his *I.s* to Grimm and Dickens one sees the perfect relationship between author and artist. For the reproduction of oil

(q.v.) made its first appearance in England at the beginning of the 19th cent., and gradually became estab. as a method of book I. Its virtues at that time lay in its capacity to interpret faithfully the varying characteristics of pen, pencil, or brush, and in the fact that the artist's original work was reproduced without the intervention of the engraver. It was used widely for illustrated works of topography, and to good effect in the original ed. of Lear's *Book of Nonsense*, 1846, but it was in France that it was unsurpassed, notably in the work of Daumier and Gavarni.

The art of engraving declined in the middle of the 19th cent., to be revived by the Pre-Raphaelites who were the leading spirits of a new school of facsimile engraving. They drew on the wood itself, sometimes setting the engraver an almost impossible task, as is evidenced by the complaints of the Dalziel brothers that Rossetti was quite unable to master the limitations of the medium. Yet they were responsible for that close and ideal union between artist and engraver which in times past had so largely accounted for the excellence of the work done. Their *I.s* figured in such contemporary magazines as *Good Words*, *Cornhill*, and the *Leisure Hour*, and in the famous Moxon Tennyson of 1857; and a study of these will at once reveal their reverence for bygone eras, their emulation of old masters, their loving attention to detail, their naturalism, and their passion for symbolical interpretation. The pictorial sincerity of Millais's designs for Trollope's *Framley Parsonage* links the Pre-Raphaelite brotherhood with Houghton, Pinwell, Frederick Walker, and even Whistler, who represent the 'Sixties' period. The most satisfying books were those illustrated by a single artist, such as Millais's *The Parables of Our Lord*, 1864, Hughes's *I.s* for Christina Rossetti's *Sing-Song*, 1872, and of course Tenniel's *Alice*, 1869. The broad characteristics of this period were idyllic delineation of the charms of country and home life and delight in open-air effects, freedom, and movement—a delight expressed partly by large clear spaces, and partly by loose but nervously sensitive outlines.

One of the later schools of illustrators was a group who sketched for the *Dial*, 1889-97. Their magazine was an artistic protest against the indiscriminate issue of books whose cheapness was the single apology for their careless binding, common paper, and inferior *I.s*, by means of photographic processes which were then beginning to establish themselves. A much more effectual protest was made by Wm Morris, when, in 1891, he set up his Kelmscott Press. Profit was a secondary consideration, and he printed a series of choice eds. which are an ornament to the shelves of the most fastidious of book collectors. Like his paintings and his tapestries, his illustrated vols. are one and all animated with a true decorative sense and the sturdy spirit of romance and medievalism. His influence gave rise to the 'Birm-

וְיִשְׂרָאֵל
ILLUSTRATIONS of



WILLIAM BLAKE

Title-page of *Illustrations of the Book of Job*

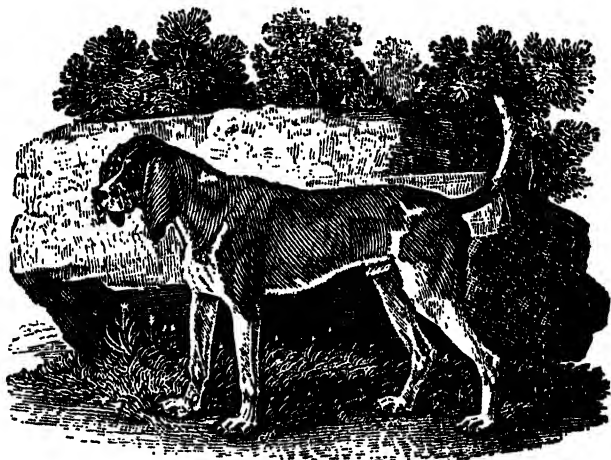
paintings mezzotint and aquatint were widely used in the hands of professional engravers, both processes being capable, unlike copper engravings and etchings, of rendering subtle gradations of tone.

Thomas Bewick first evolved the technique of wood engraving, as opposed to wood cutting, by working on the end grain of hard woods such as box, and achieved an astonishing range of tone and sense of depth. His love of country life and his genius for depicting character exemplify themselves in his smaller vignettes, though the 2 works generally acknowledged to be his greatest are the *General History of Quadrupeds*, 1790, and *History of British Birds*, 1797. He founded the school of Eng. wood engraving which has continued with few interruptions down to the present day. Blake's one venture in the field of wood engraving was a number of vignettes for an ed. of Virgil's *Pastorals*, 1821.

Senefelder's invention of lithography

ingham school,' and without exaggeration may be said, even to-day, to inspire all workers in applied arts. And with Morris must be associated Ruskin, who gave such substantial and timely encouragement to the struggling artists of the day. His *Modern Painters* and *Stones of Venice*, for which the services of the best engravers were engaged, still remain models for all who aspire to making beautiful books. In the last decades of the 19th cent. there were many fine illustrators, but in their conception of art, method, and choice of subject they were

plate which is then etched leaving the lines of the drawing, which are acid-resistant, in relief. The plate is then mounted and printed in the same way as a wood engraving. In an age of increasing commercialisation this process had the advantage of speed, and from the artist's point of view it had the merit of faithfully reproducing his original drawing in any desired size, and the original itself was not destroyed in the process. This was soon followed by the arrival of the half-tone process which was a method of reproducing continuous tone subjects such as



THOMAS BEWICK: 'THE OLD ENGLISH HOUND

From *A General History of Quadrupeds*, 1790

too individualistic to make any effort at grouping or association expedient or even possible. The conventional grace of du Maurier, the clever 'simplicity' of Phil May's cartoons in *Punch*, the pen-and-ink drawings of E. A. Abbey and Harry Furness were all popular and had their imitators. In colour Walter Crane expressed delightful fancies in the daintiest decorative designs. Kate Greenaway's studies of charming children in mob cap and long skirt and Randolph Caldecott's gay hunting scenes were, and are still, familiar.

The advent of photography (q.v.) in the last decades of the 19th cent. as a medium for reproducing drawings was to revolutionise the whole field of I.—intaglio, planographic, and relief. Among the first to exploit its possibilities was Aubrey Beardsley, whose brilliant black and white drawings were reproduced by means of line blocks. The line block is made by printing a photographic negative of the artist's drawing on to a sensitised metal

photographs. In principle it is the same as the line block except that the negative which is to be printed on the metal plate is first broken up, by exposure through a cross-lined screen, into a series of dots of varying sizes, creating an illusion of tone. Coloured originals are readily reproduced by the half-tone process by means of colour filters which break down the tones of the original into their 3 primary elements. Separate half-tone plates are made of each and superimposed in printing to re-create the colours of the original in their true values. The process is capable of reproducing a wide range of subjects both in monochrome and colour, and is used for newspaper I. and very widely in books. It can give very fair representations of pencil and crayon drawings by the use of special etching techniques. It gives the artist great scope in that the reproduction of his original is mechanical, leaving him with no medium to be conquered. Against this must be set the fact that the half-tone screen ultimately gives

an imperfect and illusory rendering of his original tones, and the mechanism of the process allows the poorest standard of draughtsmanship such as may be seen in the cheaper magazines. In the field of colour a later development has been its use in reproducing colour-transparent photographs.

The present century has seen rapid development in the other realms of I. Of the intaglio processes photogravure (q.v.) has a place in book I. mainly for the reproduction of photographs when a softness of tone is desired, and for reproducing engravings themselves. Its chief commercial use to-day, however, is in the production of a wide range of illustrated periodicals, where, by means of rotary printing on paper fed from a roll, high speeds are attainable on long runs with very little deterioration of the printed image.

Lithography, is a planographic process. Commercially, metal printing plates are used, prepared by photographic methods. While it can interpret a wide range of artistic techniques, it cannot attain the crispness and clarity of autolithography where the artist is working direct on to a stone. The main reasons for this inferiority are the necessary intervention of professional copyists and retouchers, and the use of the screen to produce variations of tonal strength. It is widely used for colour work and in this field has the advantage over process halftone that it can achieve much more delicate effects on a wider variety of paper surfaces. Art paper, sometimes considered the artistic bugbear of halftone, need never make its appearance in lithographic work.

One other photographic process which has perhaps more than any other overcome the limitations of the camera must be mentioned briefly at this stage. Collotype, like lithography, is a planographic method of printing (i.e. from a flat surface), but unlike any other method it dispenses with a screen for reproducing tones. It can reproduce fine I.s with great fidelity both in black-and-white and in colour, but owing to the instability of the printing surface it deteriorates rapidly and is therefore confined to printing small eds. The process excels in the reproduction of works of art, where, with as many as 7 or 8 printings, a result is obtained which can be achieved by no other process.

In view of the acknowledged limitations of photographic methods it is not surprising to find an antithetic tendency at work among present-day artists over the whole field of book I. This manifests itself in a return to earlier craftsmen's methods, notably in the flourishing schools of wood engraving; and much fine work is also being done by autolithography, especially in colour. Earlier in the century the work of various private presses did much to revive and encourage good craftsmanship, and in this connection should be mentioned the work of Eric Gill and Robert Gibbings (qq.v.) at the Golden

Cockerel Press. The ed. of *The Canterbury Tales* from this press is a fine example of the work of Gill, whose classical spirit combined with great skill as a designer of lettering and typefaces in many instances resulted in a harmonious blending of I. with the printed text. Chaucer, the inspiration of sev. modern illustrators, has also been pub. in a fine ed. with colour plates by Russell Flint, and in America with wood engravings by Rockwell Kent. Another American much of whose output has appeared in Great Britain is E. McKnight Kauffer, who did much imaginative work in the field of advertising as well



as in book I. Of the latter his I.s for the Nonesuch Press *Don Quixote* should be mentioned. This press has contrived to produce books matching in quality those from the private presses, but, by making the best use of modern mechanical methods, to publish them at comparatively cheap prices. Other artists who have done fine work in wood engraving are Paul Nash, Douglas Bliss, Clare Leighton, John Farleigh, and many more. Linoleum, too, has proved an excellent medium for either black-and-white or colour I., and 2 artists who have worked successfully in this medium are Claude Flight and Wm Kermode. Autolithography has seen a welcome revival, and in this connection should be mentioned the work of Barnett Freedman (especially a series of his coloured I.s for Tolstoy's *War and Peace*), John Nash, and John Piper.

Special mention should also be made of modern I. in France, and in particular of the fine eds. produced by Ambroise Vollard which such masters of the Parisian school as Bonnard, Matisse, and

Rouault adorned with drawings or engravings.

The constant development of new processes of book I. (as for example the recent application of plastics to lithography) tends towards a new synthesis of the craftsman and the machine, with the aim of achieving the maximum fidelity of reproduction while allowing the greatest scope to artistic technique. See A. M. Hind, *History of Engraving and Etching*, 1923; G. White, *English Illustration: the Sixties*, 1906; H. E. Furst, *Modern Woodcut*, 1924; F. J. Darton, *Modern Book Illustration*, 1931; The Studio, *Children's Books of Yesterday*, 1933; J. Thorpe, *English Illustration: the Nineties*, 1935. Consult also *Arts et Métiers Graphiques and Graphis*.

See also BLOCK-BOOKS; CARICATURE; ENGRAVING; ILLUMINATION OF MANUSCRIPTS; PHOTOGRAPHY; PRINTING; and articles on artists named.

Illyés, Gyula (1902-), Hungarian poet, novelist, and playwright, b. at Rácegrespusztá. He is best known for the semi-autobiographical *People of the Pusztas*, which is available in Fr., 1943, and German, 1947.

Illyria (Lat. Illyricum), name of a vaguely defined mountainous dist. on the E. coast of the Adriatic, running from Durazzo in Albania up to Rijeka in Istria. Inland the line was still more indefinite, but it may be regarded as including the N. parts of Albania, Montenegro, part of Serbia W. of the Morava, Dalmatia, Bosnia-Hercegovina, and part of the old dist. of Croatia (q.v.). The Rom. prov. of Illyricum varied in area from time to time, and no strict geographical limits can be assigned to it. In early Gk hist. we only know of the barbarian 'Illyrians,' whose legendary ancestor was descended from Cadmus and Harmonia; archaeological research shows that the primitive peoples spoke a Venetic dialect, also Meroapian, akin to modern Albanian. Gk colonies were settled all along the coast during the whole of the 6th cent. BC, and coins and inscriptions have been found at Durazzo (Epidamnus), Solin (Salona), Dubrovnik (Epidaurus), etc. The inter-tribal warfare seems to have been checked by Celtic pressure in the 4th cent., and a confederation was formed which pressed on Macedonia. Under a chief Bardylis, and his son, Oditus, Amyntas was defeated, and later Perdiccas. Philip of Macedon finally crushed them. The tribes turned to piracy and harried both Gk and Rom. trade. Their queen Teuta insolently refused terms, and murdered the Rom. ambas. In 180 BC an independent rep. of Dalmatia was estab., and the kingdom of the Illyrian Genthus was annexed to Rome, 168; Dalmatia continuing aggressive and powerful till AD 9, when the whole country became a Rom. prov. It furnished some of the best soldiers for the Rom. armies, and many of the emperors were Illyrian by birth. In AD 379 E. Illyricum went to the Byzantine empire. The ethnological character of the dist. was

modified by the Hunnish invasion in the 5th cent., and in the 7th cent. by the Slavonic immigration of Croats and Serbs, though the coast was still remained Italian in civilisation. The primitive races remain in Albania alone. Napoleon estab. the Illyrian provs. as part of his empire. After the Congress of Vienna (q.v.) in 1814 the dist. went to Austria the kingdom of title it retained until 1849.

Illyricus, see FLACTUS, MATTHIAS.

Il'men, lake in the Novgorod Oblast of NW. Russia, 30 m. in length from E. to W. and 24 m. in greatest breadth. Its outlet is the R. Volkhov flowing N. into Lake Ladoga. In the Middle Ages I. was on the trade route from Scandinavia to Byzantium, and its area was the core of the Novgorod Rep.

Ilmenau, Ger. tn in the dist. of Suhl, on the Ilm, in the Thuringian Forest, 12 m. N. by E. of Suhl (q.v.). It is a health resort, in a fluorspar-mining area, and was frequented by Goethe (q.v.), who wrote his *Iphigenia* here. Pop. 20,000.

Ilmenite, titaniferous iron ore found in many localities, more particularly at Krageroe in Norway, where good crystals occur, in the U.S.A., and in Canada. It has been found as sand on the banks of the Mersey, and at Helston in Cornwall. The name is derived from the Ilmen Mts (Urals), where it is found in magnificent crystals. Its formula is generally given as FeTiO₃, but in many cases the mineral contains magnesium, so that it may be written (Fe,Mg)TiO₃. It is not isomorphous with haematite, but belongs to the parallel-faced hemihedral class of the rhombohedral system.

Ilminster, mrkt tn of Somerset, England, 12 m. from Taunton. Pop. 2610.

Il-Obeid, see EL OBEID.

Ilocos Norte, mountainous coast prov. of NW. Luzon, Philippine Is. Pop. 251,455. Its peaks are in part volcanic, and the valleys are watered by the Pagtan and other streams. It grows rice. The cap. is Laoag (pop. 44,406).

Ilocos Sur, coast prov. of NW. Luzon, Philippine Is. Area 1037 sq. m. It is rather flat and very fertile. Rice is grown, and the chief industry is weaving. Pop. 276,278.

Iloilo, Sp. settlement, and the chief port after Manila, in the Philippine Is. It is the cap. of Iloilo prov., Panay, opposite Guimaras Is. An open port, it exports hemp, rice, and sugar. Pop. 110,122.

Ilorin, tn of the Yoruba tribe, S. Nigeria, some 250 m. from Lagos. It is a busy trading centre in palm-oil products, cocoa, hides, etc., Pop. 42,000.

Ilseburg, Ger. tn in the dist. of Magdeburg, at the N. foot of the Harz Mts (q.v.), 45 m. WSW. of Magdeburg (q.v.). It is a health resort and has steel and copper industries. Pop. 7000.

Ilnum, see HELLIN.

Ilius, son of Tros and Callirrhoe, great-grandson of Dardanus, supposed to be the founder of Ilium, which he called Troy after his father. His son was Laomedon, and his grandson, Priam.

Iiva, see **ELBA**.
Iversgehefen, N. suburb of Erfurt (q.v.), Germany.

Iivessalo, Yrjö (1892-), Finnish scientist, noted for his research in forestry.

Imac, see **MALACHY, SAINT**.

Image-Worship, the use for public or private devotions of graven or painted representations of sacred persons or things regarded as themselves divine or housing divinity. (See also **FETTERISM**; **IDOLATRY**; **TOTEMISM**.) It is a comparatively late development of primitive religion, for the making of images marks a great advance in religious thought and the birth of conceptions of the Divine character and attributes. Varro affirms that for more than 170 years from the foundation of Rome the city contained no image of a god, and that neither in Greece, Persia, nor Egypt were there temples or idols in the earliest times. The Decalogue forbids I.; but the denunciations of the prophets show how easily the Jews adopted the gods and graven images of their heathen neighbours. I. is to be carefully distinguished as different in kind from the veneration paid by Christians from the beginning to representations of God, of Christ, and of His saints. Such veneration is no more than relative, i.e. symbolic and expressive of the affection and respect felt for the person of the original. See **ICONOCLASTS**.

Imagist school of poetry had for its philosopher the Englishman, T. E. Hulme, for its prophet the cosmopolite American, Ezra Pound, and for its expounder the Amer. poetess, Amy Lowell (q.v.). Others who belonged to this school in the period 1912-17 were the Americans, 'H. D.' (Hilda Doolittle), Harriet Monroe, and John G. Fletcher, and the Englishmen, Richard Aldington (and later T. S. Eliot, formerly a U.S. citizen), and Harker Read. Like all new schools of poetry, it was a revolt. In this case it was a revolt against excessive romanticism, against loose or sentimental verbal painting, and against the sing-song school. It was Hulme who started the discussion of the image in poetry, and his friend, Pound, who first gave it practical application. All these poets pursued the ideal of orderliness, conciseness, and strict objectivity, and they found inspiration in Gk., Lat., Chinese, and Jap. poetry. Indeed, it was largely due to the influence of the I.s that trans. from Chinese verse had such a great vogue some years ago. All the I.s, according to their temperament, sought to act upon Hulme's theory, that the chief aim was to attain accurate and definite description, and that it was essential to prove that beauty might be found in small commonplace things. Most of the experimenters used free verse. See Amy Lowell (ed.), *Some Imagist Poets*, 1915; G. Hughes, *Imagism and the Imagists*, 1931.

Imam (Arabic 'he who stands in front,' 'leader'). In Islam it was first used to denote the man who led the communal worship; later every mosque according to its importance had its I., appointed or

voluntary; a big mosque might have sev. As Mohammad and his immediate successors led worship in person, I. came to mean ruler; the Shiites (q.v.) prefer this term to caliph. The 4 I.s are the founders of the schools of law, Shafi'i, Hanafi, Maliki, and Hanbali. In Turkey the I. was also an official with duties connected with personal status and transfer of property.

Imam Yehia, see **YEMEN**.

Imatra Falls, in Finland, on the Vuoksi, a short distance after the riv. leaves Saimaa Lake, 39 m. N. of Viipuri. The water, which was harnessed for power before the Second World War, is released to make spectacular falls only during the tourist season.

Imaus, anct. name for a part of the Himalaya Mts.

Imbabura, prov. of N. Ecuador, with Pichincha to the S., Esmeraldas to the W., and Carchi to the NE. Lying in the Andes mts, it contains the 15,000-ft volcano I. Stock-raising is the prin. occupation, with subsidiary tropical agriculture and poncho weaving. Cap. Ibarra (q.v.). Area 2136 sq. m.; pop. 158,000.

Imbecility, see **CRETINISM**; **IDIOTCY**; **MENTAL DEFICIENCY ACTS**; **LUNACY**.

Imbros, or **Imros**, is. in the NE. of the Aegean Sea, S. of Samothrace. It belongs to Turkey and is joined with Samothrace to form the administrative dist. of the sanjak of Lemnos. It is extremely fertile. During the Dardanelles campaign in the First World War Gen. Sir Ian Hamilton, commander of the Brit. contingent, had his H.Q. at I. It was here also that the 11th Div. was concentrated before its attack at Anzac. When the withdrawal of the Brit. forces took place they first went to I. and one of the other is. clear of the peninsula. I. was held by the Greeks until 1923, when it was returned to Turkey under the treaty of Lausanne. Prin. tn. Kastorn. Pop. 6500.

Imeretia, area in W. Georgia (Transcaucasia), in the upper part of the Rioni basin around Kutaisi. It is noted for its silk and wine, manganese (Chiatura), and coal mining. In the 16th-18th cents. it was an independent kingdom; it was annexed by Russia in 1804.

Immaculate Conception, dogma of the Rom. Catholic Church, according to which the Blessed Virgin Mary (q.v.), through the antecedent merits of her Divine Son, was conceived without original sin (q.v.). A feast in honour of Our Lady's conception had been observed in the Church for more than 700 years (though its precise significance had been keenly disputed by theologians) when the doctrine was solemnly defined as an article of faith by Pius IX. on 8 Dec. 1854 in the Bull *Ineffabilis Deus*. The Gk Church celebrates the conception of Mary as 'The Conception of St Anne' (Our Lady's mother) on 9 Dec. The feast in the Rom. Catholic Church is on 8 Dec., on which date also the Anglican Church observes 'the Conception of the Virgin Mary.' See Elizabeth Sharpe, *The Catholic*

Doctrine of the Immaculate Conception, 1933; T. E. Bird, Explanation of the Immaculate Conception, 1937.

Immanence, or Immanent (Lat. *in*, in, and *manere*, to remain), philosophic term used to denote the conception that the Deity pervades the universe itself, and that His activity and existence are expressed solely by the unrolling of the natural cosmos. It is in opposition to the doctrine of transcendentalism, which teaches that the Deity has an existence apart from the universe, which is in effect only a subsidiary expression of His activity. Finally, *vital I.* is the term used by Rom. Catholics to denote the modernist theory that religion has its source in man's intimate sense of the divine or need for the infinite. (Pius X's Encyclical *Pascendi*.)

Immanuel, or Emmanuel, Heb. name meaning 'God (is) with us.' It first occurs in the Bible in the prophecy of Isaiah (vii. 14) to Ahaz, king of Judah, concerning a child to be b. as a sign from God that Judah would not be destroyed by Syria and Ephraim. It occurs again in Matthew i. 23, where it is applied to the birth of Jesus the Messiah in fulfilment of the prophecy.

Immermann, Karl Lebrecht (1796-1840), Ger. poet and dramatist, b. at Magdeburg, studied law at Halle, fought at Ligny and Waterloo. On his return to Halle began his inspiring friendship with the Countess Elise von Ahlefeldt. He was a judge at Magdeburg (1823) and Düsseldorf (1827). In 1839 he managed the Düsseldorf Theatre. His dramatic success was with the historical tragedies, *Das Frauenpiel im Tirol*, 1827, and *Kaiser Friedrich II.*, 1828. In 1831 appeared the mystic poem, *Martin*. Of his novels, *Epigonen*, 1836, the last imitation of Goethe's romanticism, and his modern realistic satire *Münchhausen*, 1838, are the best known. *Der Oberhof*, intercalated in the latter, started the vogue of the peasant story in Germany. See H. Maync, *Immermann: der Mann und sein Werk*, 1921; F. Kayser, *Immermann und das Elberfelder Theater*, 1935.

Immigration, moving into a country to settle there, the opposite of emigration (q.v.). In modern times increasing attention has been paid to the subject by govts. Thus the govts. of Brit. colonies, now dominions, have offered inducements to attract Brit. subjects: assisted passages, grants of land, information bureaux in London, and advertising their resources. A great cause of I. has been persecution. The *Mayflower* left England with settlers who fled from religious oppression under James I in 1620. The revocation of the edict of Nantes by Louis XIV of France drove thousands of Fr. Protestants from their country. Many of them went to Prussia, and were hospitably estab. at Berlin, then a new tn. to whose prosperity they contributed by their skill and industry. Others came to England, settling at Spitalfields and Bethnal Green, carrying on silk-weaving, watch-making, etc.

The problem of the 'undesirable alien' faced Great Britain in the last quarter of last century. From 1880 a great influx of poorer-class Jewish immigrants from Russia, Poland, and SE. Europe came to England on their way, mostly, to the U.S.A. They were largely refugees from anti-Semitic legislation and conscription. Amer. I. Laws in 1882 kept many out, on the grounds of poverty or disease, and London absorbed some of the poorest and sickliest. They displaced Brit. workers, and sometimes were housed together in insanitary conditions. In 1889 a committee of the House of Commons inquired into the question, and in 1902 a Royal Commission reported on it. There resulted the Aliens Act, 1905, which stated that an immigrant could be repatriated if he could not show he was able to support himself and dependants, or if he was an idiot, a lunatic, or suffering from disabling infirmities.

The country which first coped with the problem on a large scale was the U.S.A. I. increased from 143,000 in 1821-1830 to 5,246,000 in 1881-90. The next decade showed a fall to 3,844,000. The total for the period 1901-10 was 8,514,000, for 1911-20, 5,736,000, and for 1921-9, 3,865,500. Immigrant aliens admitted 1947-8 numbered 171,000, and in 1955 238,000, including nearly 16,000 from Great Britain. In the earlier years of last century the immigrants to the U.S.A. came mainly from Britain and Ireland. Political conditions and the revolution of 1848 caused many Germans to go to America, and the flow continued. The development of America's railway system and opening up of farm lands drew people from all parts of W. Europe. Towards 1900 incomers from S. and E. Europe began to predominate: Austria-Hungary, Italy, and Russia furnished half the total number. This caused uneasiness among native Americans. The Act of 1882 was followed by the Undesirable Persons Act of 1891, providing that every person arriving from abroad was to be examined and prohibited from landing if found to be a convict, lunatic, idiot, epileptic, contagiously diseased person, pauper, polygamist, prostitute, or anarchist. Alien Contract Labour Laws of the '80's and '90's prohibited anyone coming to the U.S.A. to do any work under contract made before arrival. Exceptions were made in certain artistic professions. In 1921 a Quota Law fixed a number of immigrants for each nation, and in 1924 this Act was stiffened. In 1929 Britain was given the leading quota, but the total was further reduced. During 1930-1 97,000 immigrant aliens were admitted, against 241,000 in the previous year. For the first time since the Amer. Civil war the ann. total was under 100,000; and it was evident that the U.S.A. had abandoned its historic rôle of giving hospitality to the distressed persecuted world over. In 1932 only 35,570 were admitted. The increase of Chinese in America also caused some concern. Their numbers grew with the extension of

the railway system, the discovery of gold in California, and the development of the Pacific coast. The Chinese worked for lower wages than would support a European, and the agitation against them led Congress to suspend all Chinese I. by a series of Acts from 1882. In 1882 there were 130,000 Chinese in the U.S.A., but by 1920 only 62,000. Jap. I. to the U.S.A. began in 1869. They entered the country freely until 1908, and numbered 30,000; but the diplomatic measures of the Jap. Gov. reduced the figure, and it was further diminished under Alien Laws. By 1921 it was 7878.

Brit. colonies, or dominions, have generally found it necessary to pass Acts to control I. The Australian Act of 1901 imposed similar tests to those mentioned in connection with Britain and the U.S.A. A language or educational test was included, and rigorous laws and regulations were applied to the employment of Chinese coolies. Similar legislation broadly applies to New Zealand. Other old Acts were the Contract I. Act, 1905, and the Restriction Acts of 1906, 1910, and 1912. New Zealand satisfactorily absorbed large numbers from Britain, and its pop., like that of Australia, became 98 per cent Brit. Excess of immigrants over emigrants was 14,219 in 1913, though by 1928 this balance was reduced to 443. Owing to the loss of 60,000 men in the First World War, a plan was formed in 1920 to recruit and assist immigrants, particularly from Britain. The number of Brit. immigrants into Australia was 78,000 in 1913, 70,000 in 1926, 44,000 in 1928, 13,000 in 1947, 36,000 in 1955. For New Zealand the figures were 6000 in 1947 and 10,000 in 1955. South Africa passed similar laws to those of Australia. The question of the Chinese became of great importance there because native labour was insufficient to supply the mining industries. The Brit. Gov. in 1904 passed an ordinance allowing the importation of Chinese labour, which was strongly opposed by the Liberal party. In 1906 55,000 Chinese coolies were employed in the Rand mines, but the Transvaal Parliament abolished the system, and by 1910 had repatriated all the Chinese. By 1938 South Africa's I. policy was to attract suitable settlers with capital; there was no demand for unskilled labour from abroad. The figures of Brit. I. into South Africa were 28,000 in 1913; 30,000 in 1928; 26,000 in 1947; and 6000 in 1955. The Canadian Gov. in normal times has offered great inducements, especially to farmers, to settle in Canada, and in 1911 185,000 persons went there from Britain. Subsequent measures of discrimination reduced the numbers to 84,000 in 1928, and 95,000 in 1928. In 1929 there were 59,000 Brit. immigrants; in 1930, 64,000, in 1931, 27,584, and in 1955, 26,000. The world-depression of 1930-2 resulted in the cutting down of those figures to a very low point. Japanese were limited severely and Chinese excluded from settling in Canada.

DESTINATION OF BRITISH EMIGRANTS

	1938	1947	1955
Brit. N. America	3,400	23,000	26,400
Australia	5,500	13,000	36,000
New Zealand	2,400	6,000	10,800
Brit. S. Africa	6,000	26,100	5,000
India and Ceylon	5,500	10,400	3,300
Other Brit. colonies	6,200	19,600	20,100
Total Brit. dominions	29,000	98,100	101,000
U.S.A.	2,000	18,600	12,800
Other foreign countries	3,100	5,100	2,500
Total	34,100	121,800	116,300

See Board of Trade *Tables of Emigration and Immigration*; *Board of Trade Journal* (monthly); and *Year Books of Brit. dominions*.

See also EMIGRATION; COMMONWEALTH AND EMPIRE SETTLEMENT ACTS; ALIEN; CHINESE LABOUR QUESTION.

Immingham Dock, 5 m. NW. of Grimsby, was constructed (1906-12) by the Great Central Railway Company on the S. shore of the Humber. It has a capacity of 1,215,000 cub. ft. and an area, with adjoining property, of about 1000 ac.

Immortality: 1. (Lat. *in*, not, and *mortalis*, mortal; *mors* = death) The continued existence of the human soul after the death of the body. In some form or other, the belief in human I. is practically universal. In even the most primitive animistic cults its influence is clearly discernible, while in all the higher cults it forms an important section of their philosophy. In the more primitive cults we have the provision made for the journeys and sustenance of the departed 'soul,' the after-life being looked upon as little more than a continuation of the earth-life. An elaborate philosophy of the after-life is found in Egypt. Among the Indian peoples a different view of the journeys after death gave rise to the belief in the transmigration of souls. After death the soul passed into the body of some fresh being, higher or lower in the social scale, according as the life had been good or bad. Buddhism made no alteration in this doctrine, except that it furnished a final goal in the attainment of Nirvana, which, involving as it does the annihilation of personality, can hardly be described as I. It has been disputed whether the Hebrews had any idea of I. before the exile, and there is much in the biblical books which would lead one to suppose that they had not (for varying conceptions of Sheol, see HELL). Among the Hebrews, Persians, and other Semitic tribes, the idea of I. is generally associated with the resurrection of the body. To the Greeks, while many of them (e.g. Socrates, Plato) held the I. of the soul, the resurrection of the body was entirely foreign to their thought. The Christian faith teaches both the I. of the soul and the resurrection of the body. St Paul (1 Cor. xv. 44, etc. and in the First

Epistle to the Thessalonians), teaches this clearly, and he also lays stress on the important fact that the resurrection-body is not carnal, but spiritual. See S. Salmond, *Christian Doctrine of Immortality*, 4th ed., 1901; R. Charles, *Critical History of the Doctrine of a Future Life*, 1897; J. Erdmann's *History of Philosophy* (vol. III, *Since Hegel*), 1921; J. G. Frazer, *Man, God, and Immortality*, 1927; J. Bailie, *And the Life Everlasting*, 1934; H. Keyserling, *Immortality* (trans.), 1938.

2. (In law) Corporations (including the sovereign, who is legally a corporation sole) are, in law, incapable of dying. This is one of the reasons for the old mortmain statutes which were directed against the conveyance of lands to eccles. corporations, it being against the policy of the law to allow land so to be tied up in perpetual ownership as to restrict the probability of its free circulation. The death of the reigning monarch is constitutionally merely an event which results in the immediate demise of the Crown, though formerly there was a real interregnum between the death of one king and the election and coronation of his successor; with the result that the State had, in the interval, no one to represent it for the purpose of maintaining order. But this fictitious I. of the king did not get rid of the rule that Parliament was necessarily dissolved by the death of the king, although it was appreciated that the consequences of a sudden and automatic dissolution were highly inconvenient, especially in regard to taxes, the collection of which could not be enforced in the absence of a proper authorisation. It was not till 1837 that an Act was passed providing for the continued existence of Parliament for 6 months after the death of the king unless dissolved sooner by his successor. For the other legal and constitutional effects of this attribute of I. in the king see CROWN.

Immortelles, Fr. name for the coloured varieties of *Helichrysum bracteatum*. See EVERLASTING FLOWERS.

Immunity from Disease, see BACTERIA—Immunity.

Imola, It. tn. in Emilia-Romagna (q.v.), at the end of the Santerno valley, 19 m. S.E. of Bologna (q.v.). It stands on the site of the Rom. Forum Cornelia, and has many anc. buildings, including a Sforza (q.v.) fortress, a cathedral (1187, much restored), and medieval and Renaissance palaces. It has a trade in agric. produce and wine. Pop. (tn) 24,300; (com.) 45,400.

Impact, the collision between bodies. The elementary classical theory of the subject is not concerned with cases in which the I. results in the destruction of either of the bodies. When 2 bodies impinge, the time of I. may be divided into 2 parts—the first known as the time of *compression*, during which even the hardest bodies suffer temporary change of shape at the point of I.; and the second, the time of *restitution*, during which the natural shape is regained. The more elastic bodies are those which exert a

greater effort to recover their shape; hence they rebound further. An *inelastic* body is one which makes no effort to regain its shape, which is permanently altered by I. Such a body is also said to be perfectly *plastic*. In actual practice no perfectly inelastic bodies have been found; but a lump of putty is an approximate example. A common experiment to illustrate this change of shape in the case of a hard body is made by dropping an ivory ball on to a greased marble surface. A circular mark is produced, the diameter of which depends on the height from which the ball is dropped.

Newton found that the relative velocity of 2 bodies after a direct I. is in a constant ratio to the relative velocity before I., and is in the opposite direction. This ratio has been found experimentally for various pairs of substances in contact. It is known as the *coefficient of restitution*, and in mathematical formulæ is denoted by e . Thus for 2 glass solids $e = 0.94$, for 2 ivory solids 0.8, and for one of iron and one of lead 0.13. The example given first approximates very closely to a state of perfect elasticity. The mathematical theory is based in the first place on considerations of the I. of smooth spheres and planes. When the surfaces in contact are rough, and the I. is not direct, rotations are set up, and the results have to be modified. First consider the direct I. of 2 spheres, that is, 2 spheres which impinge in such a way that their centres lie on a line which is the same as their lines of motion. Let m, m_1 be their masses, u, u_1 their velocities before I., and v, v_1 their velocities after I. All velocities are measured in the same direction, and if the spheres are moving in opposite directions u or u_1 will be negative. Since at I. the impulse received by one body is equal and opposite to that received by the other, the momenta received are equal and opposite. Hence the total momentum in either direction in the line of motion is unaltered by I. Hence follows the equation $mu + m_1u_1 = mv + m_1v_1$. Again, Newton's Experimental Law states that the relative velocity after I. is equal to $-e$ times the relative velocity before. Hence $v - v_1 = -e(u - u_1)$. These 2 equations are then sufficient to determine v and v_1 , the velocities with which the bodies move off after I. Thus, in particular, a ball falling to the ground with velocity u rebounds with velocity eu . It will rebound a second time with velocity e^2u , and so on. When the I. is oblique, the components of the initial velocities perpendicular to the line of centres at I. are unaltered. This gives 2 equations, as stated above, and 2 similar ones for the components of the initial velocities resolved along the line of centres, and hence there are 4 equations which will determine the 2 new velocities and the new directions after impact. In the former case, the kinetic energy before impact is $\frac{1}{2}mu^2 + \frac{1}{2}m_1u_1^2$, and after impact is $\frac{1}{2}mv^2 + \frac{1}{2}m_1v_1^2$. Using the equation $v - v_1 = -e(u - u_1)$ derived above, in conjunction with the equation $mu + m_1u_1 = mv + m_1v_1$, and eliminating v and v_1 , it

can be shown that $(\frac{1}{2}mv^2 + \frac{1}{2}m_1u_1^2) - (\frac{1}{2}mv^2 + \frac{1}{2}m_1u_1^2) = \frac{1-e^2}{2} \frac{mm_1}{m+m_1} (u-u_1)^2$.

The term on the right-hand side represents the kinetic energy lost by the I. It reappears chiefly in the form of heat.

Impanation (Lat. *panis*, bread), theological or eccles. term adopted by some earlier Protestants and used in the controversies in regard to the Real Presence of Christ in the bread of the Eucharist. It explained this as 'an hypostatical and personal union of the bread with Christ's body.' It differs from Transubstantiation (q.v.), and has sometimes been used loosely as equivalent to Consubstantiation. See also REAL PRESENCE.

Impatiens, genus of about 500 balsaminaceous plants which occurs in warm and tropical countries, and is so called from the sudden and elastic force with which the species burst their capsules. *I. balsamina* is the tender ann. balsam, raised under glass in Britain, as are *I. flaccida*, *I. holstii*, and *I. sultani*. *I. noli-tangere* is the hardy native touch-me-not, and *I. roylei* and *I. amphorata* are other hardy anns. of the Himalaya.

Impeachment, arraignment before the High Court of Parliament of a minister of state for high crimes and misdemeanours. Now obsolete. The first recorded exercise of the power was in the reign of Edward III, when Latimer and Neville were impeached for the fraudulent purchase of crown debts and for removing the staple from Calais. I. was a judicial proceeding in which the Commons acted as accusers and the Lords, in pursuance of the long-settled rule that the judicial powers of Parliament are vested exclusively in the Upper Chamber, as judges. A member of the House of Commons moved the I. in the first instance, and if the motion was carried the accused was impeached by a deputation of members at the bar of the House of Lords.

Public opinion has for years been a far stronger inducement to ministers not to abuse their powers than the terrors of an I. Formerly, however, it was a valuable weapon in the hands of the House of Commons for controlling the actions of the crown ministers. But there is no doubt whatever that the power was grossly abused. Ministers were often impeached for reasons which in these days would merely form ground for strong party differences. A famous case of I. was that of Lord Chancellor Bacon on a charge of receiving bribes. This I. re-affirmed the right of the Commons to hold ministers responsible for their acts to the nation. The I.s of George Villiers, duke of Buckingham, in 1626, Thomas Wentworth, earl of Strafford, in 1626, and Archbishop Laud in 1640 exemplify the varying fortunes of party warfare. Buckingham was charged with accumulating offices. In these days patronage is a frequent subject of hostile party and Press comment, but the law officers of the crown would hardly suggest an I. The last I.s were those of Warren Hastings in 1788 and Lord Melville in 1806 for alleged

malversation of office. But even before that time the principle of ministerial responsibility (see CABINET; GOVERNMENT) to Parliament had become the fundamental safeguard of the whole principle of representation.

The procedure on I. is similar in the U.S.A., in which country the most famous case was that of President Johnson in 1868.

Impedance of an electric circuit (q.v.), Z , is the ratio of voltage to current. It consists of 2 components, resistance R and reactance X which depends on inductance L , capacitance C and frequency of supply $f = \frac{\omega}{2\pi}$. In complex notation (see ALTERNATING CURRENT)

$Z = R + jX$, $X = \omega L - \frac{1}{\omega C}$. The current

lags behind the voltage if $\omega L > \frac{1}{\omega C}$ and

leads if $\omega L < \frac{1}{\omega C}$, the phase angle being

in either case such that $\cos\phi = R/Z$ and the r.m.s. values $V = I\sqrt{R^2 + X^2}$.

Impenetrability is generally accepted as one of the properties of matter, viz. that 2 different portions of matter cannot occupy the same space at the same time. When a nail is knocked into a piece of wood it takes up its new position by displacing certain particles of the wood. Many experiments were made to disprove the theory, notably one in which a metal globe was completely filled with water and then compressed until the outside was seen to be covered with moisture. But this was explained as merely proving that particles of water could be forced between the particles of metal. A pint of water and a pint of alcohol make a mixture of less than 2 pints, but this is due to the fact that in the mixture the molecules are closer to one another. On the other hand, the many theories recently advanced of the composition of atoms make it doubtful whether they possess the property of I.

Imperator, title conferred from the 2nd cent. BC in anct. Rome on victorious generals by their troops, but laid aside on the termination of their command. Julius Caesar was the first to use it continuously (58-44 BC). Under Augustus a principle was estab. whereby all honours of war, no matter by whom earned, belonged to the emperor; and from Vespasian onwards the title I. became the emperor's official praenomen, though it was also added after his name together with a number to indicate the number of times he had been so hailed following a victory of the imperial armies.

'**Imperator**,' passenger and mail steamer of the Hamburg-Amerika Line, launched by the Kaiser Wilhelm II in 1913, but later called the *Berengaria* (q.v.).

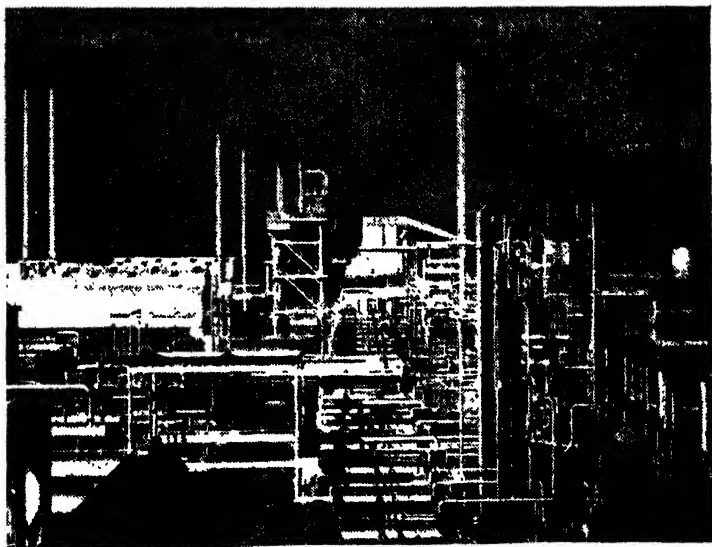
Imperia: 1. Prov. of Italy, in W. Liguria (q.v.). It lies generally in the Maritime Alps (q.v.), except for a coastal strip on the Riviera di Ponente (q.v.). The chief riv. is the Argentina; there are

many riv. valleys. The prin. tns include I. and San Remo (qq.v.). Area 455 sq. m.; pop. 173,000.

2. It. tn. cap. of the prov. of I., 56 m. SW. of Genoa (q.v.). It is on the Riviera di Ponente, and was formed in 1923 by the fusion of 2 coms., Oneglia and Porto Maurizio. There is a fine 19th-cent. neo-classical cathedral. I. has olive-oil refineries and is the centre of the oil trade of Liguria. It is a much-frequented holiday resort. Pop. 29,000.

rubber chemicals, detergents, paints, lacquers and varnishes, plastics, synthetic fibres, synthetic resins, adhesives, leather-cloth, salt, explosives, ammunition, non-ferrous and light metal products, and building products.

Imperial College of Science and Technology, formed in 1907 by the federation of 3 institutions, the Royal College of Science, the Royal School of Mines, and the City and Guilds College (essentially a school of engineering), situated in South



Imperial Chemical Industries Ltd.

WILTON WORKS: OLEFINE PLANT

Imperial Air Routes, *see* AVIATION, CIVIL; AIR MAIL; etc.

Imperial Airways, *see* AVIATION, CIVIL.

Imperial Canal, *see* GRAND CANAL.

Imperial Canal of Aragón, Sp. canal extending from Tudela (q.v.) to 40 m. below Zaragoza (q.v.). It was begun in 1529 under the Emperor Charles V, and was completed in the 18th cent. It is now used mainly for irrigation. Length 85 m. Average width 69 ft.

Imperial Chemical Industries Ltd. was formed in 1926 by the amalgamation of 4 Brit. chemical companies: Brit. Dyestuffs Corporation Ltd., Brunner, Mond & Co. Ltd., Nobel Industries Ltd., and United Alkali Co. Ltd. The company's authorised capital is £220 million and its prin. products are acids and alkalis, heavy and fine chemicals, solvents, fertilisers, pharmaceuticals, insecticides, dyeing and textile auxiliaries, pigments,

Kensington on a site purchased from funds at the disposal of the Commissioners of the Exhibition of 1851. The college as a whole is a school of London Univ. (q.v.). Its predominant function in the sciences, mining, metallurgy, and engineering is to train students for direct service in industry. The Royal College of Science has its origin in the incorporation (1853) of the Gov. School of Mines and of Science applied to the Arts (founded 1851 by de la Beche (q.v.), the famous Eng. geologist) with the older Royal College of Chem. This college of chem. was planned as the Davy College of Practical Chem.; a publicity campaign by the scheme's originators finally secured the foundation of the college in 1845, and its title was changed almost immediately to the Royal College of Chem. This college was incorporated with the Gov. School of Mines and of Science applied to the Arts

(1853), and later this joint institution was reorganised as the Royal School of Mines and the Normal School (ultimately the Royal College) of Science (1881). The third constituent institution of I. C., the City and Guilds College, owes its being to the corporation and Livery Companies of the City of London. The I. C. of S. and T. is comparable with the Massachusetts Institute of Technology, and the understanding concluded with that institution in 1944 was a recognition of community of aims and interests.

In Jan. 1953 the gov. announced its plans for the development of higher technological education at univ. level and the college was selected to be the spearhead of this expansion. The college was instructed to prepare plans for the increase of the number of students by 1962 from about 1600 to about 3000. There are now more than 2000 students.

Imperial College of Tropical Agriculture, incorporated in 1921 as the outcome of recommendations made in their report by a committee appointed by Lord Milner in 1919 (see Cmd. 562). The object of the college is to promote the study of tropical agriculture in suitable surroundings; to create a body of Brit. expert agriculturists well versed in the knowledge of the cultivation of land in the tropics, of chemists, and of scientific advisers possessing an intimate knowledge of the means of combating pests and diseases; and to conduct research. The college buildings are at St Augustine, near St Joseph, Trinidad. The funds are derived from contributions from colonies and industries participating in the movement and an imperial grant. The Imperial Dept of Agriculture founded in 1893 was amalgamated with the college in 1922. Post-graduate courses are open to holders of a degree or diploma of any Brit. univ. or other academic institution approved by the governing body of the college. Refresher courses are open to officers of agric. depts in the tropics, or similar institutions. There is also a 3-year diploma course primarily intended to give instruction in West Indian agriculture, besides a 2-year course in sugar technology.

Imperial Communications Advisory Committee, see COMMONWEALTH TELECOMMUNICATIONS BOARD.

Imperial Conference, see PRIME MINISTERS MEETINGS.

Imperial Defence College, formed in London in 1927, is run under the supervision of the chiefs-of-staff committee. During the Second World War it was closed, but reopened in 1946. Its object is to produce a number of senior officers of the armed forces and civil officials who would be capable of high commands in the structure of Commonwealth defence, both in peace and war. Courses last a year, and are attended by students from the R.N., Army, R.A.F., Home and Foreign Civil Services, Colonial Service, and the Commonwealth. Senior officers from one of the fighting services hold, in turn, the appointment of Commandant for 2 years. See DEFENCE COMMITTEE.

Imperial Defence Committee, see COMMITTEE OF IMPERIAL DEFENCE.

Imperial Institute, founded in 1887 on the initiative of King Edward VII (then Prince of Wales) to commemorate the Golden Jubilee of Queen Victoria. The cost was met by contributions from all over the empire. The buildings occupied by the I. I. consist of a main block, with an overall frontage of 750 ft to I. I. Road, and an extensive range of exhibition galleries at the back. The architect was T. E. Colcutt, and the building was completed in 1893 and opened by Queen Victoria in May of that year. The main building has 3 towers, the central or queen's tower, which contains a peal of 10 bells, being nearly 300 ft high. The bell-chamber, 200 ft above pavement-level, is said to be the highest in the Brit. Isles. The I. I. is a centre for information about the Brit. Commonwealth. It is an independent grant-aided organisation operating under the aegis of the minister of education. From its foundation until 1902, when by Act of Parliament it was placed under the care of the Board of Trade, the I. I. was a private body governed by royal charter. In 1907 management of the I. I. passed by agreement to the Colonial Office, and this arrangement was given statutory sanction by an Act of 1916. In 1925 an Act was passed which repealed earlier Acts and transferred the institute to the control of the Dept of Overseas Trade (Board of Trade). At that time the institute's functions were partly scientific (the examination of raw materials from the Commonwealth) and partly educational. In 1949 Orders in Council limited the institute's activities to education and public information, under the general direction of the minister of education. The scientific depts were taken over by the Colonial Office. In 1953, by a further Order in Council, the institute once more became an independent body, although the minister retained his parl. responsibility. Nearly half a m. of exhibition galleries, open free to the public on every day in the year except for Good Friday and Christmas Day, illustrate the life, scenery, and resources of all the countries and territories of the Brit. Commonwealth. A magnificent collection of dioramas (illuminated picture models) is a notable feature. The institute has a small cinema, seating 360 people, which shows documentary films, and an art gallery for temporary exhibitions of the work of Commonwealth artists. The institute's galleries and cinema are excellent media for visual teaching and they are visited by many thousands of school children who come in organised parties to receive lessons from the permanent teaching staff. Other educational services include lectures, conferences, visual aids, and pubs. A book stall offers a large and carefully selected stock of inexpensive maps, wall charts, books, and leaflets about the Commonwealth drawn from official and other reputable sources. The institute issues

an ann. report which is obtainable free on request.

Imperial Institute of Entomology. *see* COMMONWEALTH INSTITUTE OF ENTOMOLOGY.

Imperial Preference is the policy by which the members of the Brit. Commonwealth would impose tariffs to the disadvantage of countries outside the Commonwealth and to their (alleged) mutual advantage. From 1846 until 1932 Britain was a free-trade country—apart from the levying of the McKenna duties (q.v.), the Safeguarding of Industries Act of 1921, and subsequent 'safeguarding' measures in 1925-8. With the spread of imperialism in the eighties of last century came the spread of the idea of I. P., and in the early years of the 20th cent. Joseph Chamberlain led a movement for protection with preference to the members of the Brit. Empire. This policy was also advocated by Bonar Law. The movement was carried on by Lord Beaverbrook (q.v.), who founded in 1930 an Empire Crusaders' party with the avowed object of making Empire Preference a reality.

Under the Import Duties Act, 1932, a 10 per cent *ad valorem* duty was imposed on a wide range of imports, but free entry was given to all dominion imports. This freedom of entry was continued under the reciprocal trade agreements made after the Ottawa Conference (q.v.) of 1932. These agreements, which have been considerably modified, provided for a tariff on a number of foreign primary products for the benefit of similar dominion products, and reciprocal tariffs against foreign manufacturers for the benefit of the U.K. manufactured goods in the markets of the dominions. Preferences were also granted to Brit. colonial goods and also by many colonies to U.K. goods.

The net effect has been to secure special benefits for particular interests in the dominions at the expense of the consumer in the mother country, and frequently at the expense of dependent peoples in the non-self-governing empire.

The approximate percentages of U.K. imports from Canada, Australia, New Zealand, and India in 1938 were 8, 7, 4, and 7. The corresponding figures had been, 4, 5, 4, and 5 in 1930. U.K. exports to South Africa were more than 8 per cent of her total exports in 1938; U.K. imports from South Africa fell from 2 per cent in 1928 to 1½ per cent in 1938. The percentage of U.K. imports from the Commonwealth rose from 29 in 1930 to 40 in 1938. The percentage of U.K. exports to the Commonwealth rose from 43½ per cent in 1930 to 50 per cent in 1938. (*See* F. C. Benham, *Great Britain under Protection*, 1941.)

It has been argued by critics that the Ottawa Conference: (1) accentuated the relapse from multilateral world trade to bilateralism; (2) impaired specialisation based on price comparisons in a world market; (3) diverted trade from economically into politically advantageous channels; (4) tended to eliminate the 'tri-

angular' trade essential to carry payments for past indebtedness; (5) substituted rigidly planned independent markets for free interdependent markets and tended to intensify fluctuations in prices and production.

Since 1945 there has been increasing hostility to I. P. in Canada, a free-trade dominion, and in the non-self-governing empire; South Africa also has been increasingly cold towards the Ottawa policy. Considerations of I. P. influenced the Brit. attitude to the European Common Market idea in 1956 (*see* CUSTOMS UNION); but the doctrine is increasingly regarded as anachronistic in an age which looks to wider world markets.

Imperial Service Order, name of a decoration confined to members of the Brit. Civil Service and consisting of the Sovereign, the Prince of Wales, and Companions to a number not exceeding 700. Long and meritorious service in either a clerical or administrative capacity at home, or in the dominions or empire, is the qualification for the order. King Edward VII founded this order in 1902, when the number was limited to 425. It was enlarged in 1912.

Imperial Tobacco Company (of Great Britain and Ireland), Limited, was formed in 1901, when some of the leading Brit. tobacco manufacturers joined forces to resist an attempt by a powerful association of Amer. manufacturers to capture the Brit. tobacco market. The original firms joining the I. T. C. retained their identity and became branches of the Company. The following is a list of the company's branches to-day: W. D. & H. O. Wills; John Player & Sons; Ogden; W. A. & A. C. Churchman; W. & F. Faulkner; Lambert & Butler; Edwards, Ringer & Bigg; and Wm Clarke & Son.

The Company manufs. cigarettes, tobaccos, cigars, and snuffs for sale in the U.K. and Eire. The export business was sold to the Brit.-Amer. Tobacco Company, Limited, in 1902. It has tobacco leaf buying organisations in the U.S.A., Canada, Nyasaland, Southern Rhodesia, and North Borneo. In addition to the purely tobacco side of the business, the I. T. C. owns and controls a number of subsidiary companies engaged in the manuf. of materials necessary to the tobacco trade—e.g. cigarette paper, carton board for making cartons, printing and packing materials, etc. The H.Q. of the company and its central administrative offices are at Bristol. It has factories in Bristol, Nottingham, Liverpool, London, Ipswich, Swindon, Newcastle upon Tyne, Glasgow, Stirling, and Dublin. The company's authorised cap. is £85,000,000, of which £72,958,816 is issued.

Imperial War Museum, founded by the War Cabinet in Mar. 1917 to be a record and memorial of the effort and sacrifice of the Brit. peoples in the Great War of 1914-18. It illustrates and records all aspects of both world wars and the other operations in which the forces of the Brit. Commonwealth have been engaged since

1914. In addition to exhibits illustrating the armed and civil defence forces, and the home front, the museum possesses photographs and films.

Imperialism. In a general sense I. means merely a system of gov. under an emperor. But the term, as used in Britain before the First World War, had a narrower but much more pregnant sense, the policy of those who aimed at knitting together the Brit. empire. To latter-day imperialists, 'the spirit of empire' sounds an inspiring note, and conjures up dreams of an A.-S. federation or fraternity of states the like of which for solidarity, material and moral progress, the world has never seen. But in its beginnings I. had no such heroic foundation. It was an antidote to the doctrines of the Manchester School, and a movement initiated in the interests of national safety. The secession of the North Amer. colonies from allegiance to the Brit. crown taught the lesson that the great colonies or dominions with representative institutions are worthy of consideration on an equal footing with the mother country, and their equal status with that of the mother country is now a political commonplace. But another lesson it taught was of more immediate importance: it seemed to many that the grant or acquisition of self-gov. was a step in the direction of final emancipation, and that it must inevitably follow that one great colony or dominion after another would eventually be lopped away from the trunk of the empire. The former commercial relations between the mother country and the colonies, by which it was hoped to keep the colonies intact by restricting the importation and exportation of colonial goods to Brit. ships manned for the most part by Brit. seamen, was artificial and doomed to failure. This policy, enacted by the Navigation Act of 1660, was continued up to the repeal of the Corn Laws in 1846; the corner-stone of Free Trade was laid in 1849 by the repeal of the Navigation Act. That this stunting of colonial trade hampered the material progress of the empire was amply demonstrated by Adam Smith and other economists. That a policy of free trade with its consequent expansion of colonial power would accelerate the final dismemberment of the empire seemed no less probable. The optimism of the Manchester School, therefore, expressed itself in the paradox that the empire was really in a better position without colonies that were no longer compelled to open their markets exclusively to the mother country, and that it was unnecessary to retain them at all. There followed after the middle of the 19th cent. a period of more or less complete mutual indifference. The colonies fostered their manufs. with the help of tariffs directed largely against Brit. goods, while Great Britain consistently ignored colonial trade. The continuance of such a policy might well have been indefinite but for the rise before the First World War of the Ger. empire, which, by shutting out food

supplies, could cripple the Brit. empire. The outcome was the Imperialist movement, which found expression in the Imperial Federation League (founded in 1884) and colonial conferences (later styled Imperial Conferences). This movement received a fresh impetus from the vigorous administration of the colonial office under Joseph Chamberlain, with whose name, and that of Cecil Rhodes, the spirit of I. in later years became primarily associated. Chamberlain, inheriting the dictum of Beaconsfield that colonial constitutions, far from being steps towards disintegration, formed part of a great policy of Imperial consolidation, encouraged the cordial relations with the colonies by organising further conferences, and invited their co-operation during the darker days of the Boer War of 1900. The so-called 'Little Englander' policy of the Manchester School was checked years before the later conferences by the almost simultaneous rush of the Powers for protectorates and 'spheres of influence' in Africa. In this race for ter., Cecil Rhodes in South Africa and Sir George Goldie (q.v.) in West Africa augmented the Brit. empire within the space of 20 years by a total area exceeding that of the whole of Europe. But even late in Rhodes's career something was lacking in the direction of a proper confidence in and reciprocity with this as well as other growing limbs of the empire. Rhodes on one occasion threatened to secede altogether unless the mother country altered her policy towards South Africa. The Imperial Federation League (which, with the enhanced status of the dominions overseas, ceased to exist) aimed at replacing dependence by association, and by such association or co-ordination to lead up to a united empire or federation, a union different both from a hegemony and from an autocratic I. like that of the Caesars or Napoleon Bonaparte.

The Brit. empire has shown great stability in tumultuous times. Five empires were involved in the First World War, and only the Brit. empire survived it. After that war the Brit. empire adapted itself to the post-war age by a process of discussion and agreement and law-making, and by enlarging instead of destroying old freedoms. This is peculiarly exemplified in the development of dominion status (q.v.) through successive imperial conferences. After the Second World War this process was continued in India and self-gov. was granted to African colonies.

Some who dislike the empire in the form in which some 'imperialists' represent it regard it as the instrument of 'economic imperialism' and Brit. professions of 'trusteeship' for the backward races as hypocrisy. They used to argue for example that vested interests were the sole obstacle to the prompt concession of absolute independence to India. For them 'imperialism,' however transmuted, is somehow out of tune with 'internationalism.' This turns largely on the policy adopted by the empire or commonwealth to the outside world: whether it

attempts to make itself economically independent and deny outsiders opportunities of trading and access to raw materials, or whether it remains a loose political association resting on ties of sentiment and common cultures but trading freely with the rest of the world. From this point of view, the policy of Imperial Preference was a retrograde step, and the association with the European common market a progressive one. After the Second World War the Brit. empire was a stabilising influence in world affairs, although India and the Asiatic empire territories, especially showed they had a mind of their own in the U.N. and international relations generally. See R. Muir, *The British Empire: How it Grew and How it Works*, 1940; E. M. Winslow, *Pattern of Imperialism*, 1948; J. A. Schumpeter, *Imperialism and Social Classes* (trans.), 1951.

Impey, Sir Elijah (1732-1809), chief-justice of Bengal, India. In 1773 he was made the first chief-justice of the newly-established supreme court of Bengal in Calcutta, and was in close relations with Warren Hastings, the governor-general. In 1775 an Indian, Nuncomar or Nanda Kumar, who had succeeded Hastings as collector of Burdwan, brought a charge of peculation against Hastings, supported by Sir P. Francis's (q.v.) and Hastings's opponents on the Council. Nuncomar was arrested on a charge of forgery, tried by I., condemned, and hanged. In 1777 I. decided in favour of Hastings over the ratification of the governor's resignation. He was recalled in 1783 and impeached for his sentence on Nuncomar, but was acquitted. Macaulay's charges of a conspiracy with Hastings to contrive a judicial murder have been entirely disproved by Sir J. F. Stephen in *The Story of Nuncomar*, 1885.

Imphal, cap. of the State of Manipur (q.v.), India. It lies in a very beautiful valley between Assam State and Burma and was the theatre of critical battles in the Burmese campaigns. See BURMA, SECOND WORLD WAR, CAMPAIGNS IN.

Implement, in Scots law, the equivalent of performance of a contract or obligation in Eng. law.

Implements and Machinery, Agricultural, see AGRICULTURAL MACHINERY AND IMPLEMENTS; PLOUGHS AND PLOUGHING; TRACTOR.

Impluvium (Lat. *pluvium*, rain), in architecture, a shallow rainwater tank in the courtyard (*atrium*) of a Gk or Rom. house.

Imports, see TRADE AND COMMERCE; FREE TRADE; PROTECTION.

Impost, in architecture, the block of stone or brickwork from which an arch springs.

Impotence, which may be caused by malformation, by general weakness due to overwork, sexual excesses, old age, anxiety, certain diseases such as diabetes, or by an affection of the spinal cord, is a condition of the male generative organs which either temporarily or permanently prevents sexual intercourse. Quack rem-

edies are useless, irritant, and harmful. As a rule an active open-air life and liberal feeding, sexual rest, tonics, and cold baths will effect a cure. A doctor should be consulted always when recovery does not follow quickly after simple remedial measures. The longer the condition persists the harder it is to cure, and in most cases it is psychological in origin. By the nature of things, I. affects the wife as well as the husband, and a cure may depend as much on her patience and intelligent co-operation as on that of the patient.

Impound: 1. To place in a pound goods or cattle distrained for rent due or for damage done respectively. The things impounded are detained until *replevied* or redeemed. A person at whose instance cattle are impounded is liable if the cattle be not properly tended while in the pound. (As to pound breach, see BREACH.)

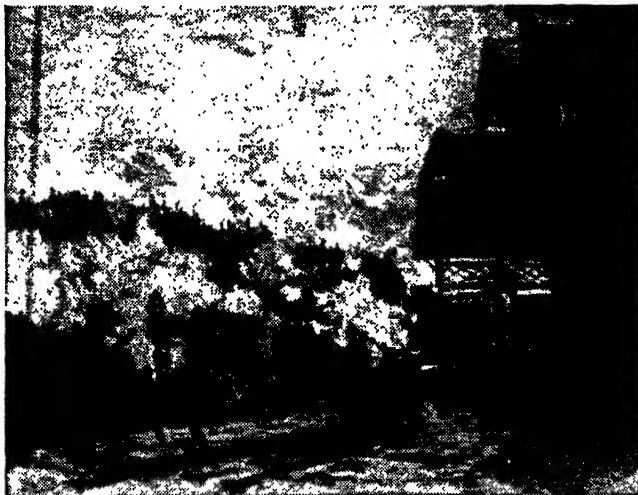
2. Where a judge during a civil trial is of opinion that the evidence discloses the commission of a criminal offence and orders the documents in the case to be retained and sent to the director of public prosecutions, he is said to I. the documents.

Impressionism, in art, the somewhat vague name given to the important type of modern painting which is most strongly represented by the work of the Fr. artists Edouard Manet and Edgar Degas (qq.v.) on the one hand and Claude Monet (q.v.) on the other. The former interpreted contemporary life as vividly as possible; the latter, for which the name 'luminism,' or, as Camille Maclair suggests, 'chromatism,' would be more correct, aims at the study of atmospheric effects, the play of light, and similar chromatic values, and implied the study of nature 'en plein air.' The term I. was coined by a Parisian critic in ridicule of a picture called 'Impression' by Monet, and was not used by the artists themselves until their second group exhibition in 1896; though the development of the idea goes much further back. The doctrine may be said to have received its first impulse from Courbet (q.v.), who advocated the alarming doctrine of Realism. To younger artists, Courbet's return to nature and his rejection of conventional subjects opened up exciting new possibilities. Manet succeeded him as the daring realist of the 1860's, notably by his famous 'Déjeuner sur l'herbe' and his young supporters at that time, Monet, Pissarro, and others, developed their theories in this decade. Since those days, in the teeth of opposition which is unparalleled in the hist. of art—except perhaps in the somewhat analogous case of Wagner's music-dramas—the movement spread over the whole of Europe, and in due course became the generally accepted and even academic style. The sources from which I. was evolved are of the widest. It was in spirit akin to the Romantic movement, as a revolt against the classical or academic schools, but technically it was no less a revolt against Romanticism also. As far as I. consisted in the rendering of light by colour and

without definite outline it had its exemplars in the past—in Velázquez, Goya, Watteau. It had, however, a more definite forerunner in Eng. landscape as practised by Constable and Turner, both of whom transmitted, directly or indirectly, their influence. The vibrant blues of Jap. colour prints (a discovery of the period) were also not without effect on the emancipation of painting from dark and muddy tones.

In the first place I. centred on Manet, who was virtually the president of a little club that used to meet at the Café

marised effect of the whole. A blurred vision of things which encircle a central object on which the gaze is focused is correct optically. To a realist painter it is also correct artistically. And not only the focal principle, but brilliant sunlight, mist, or perspective are capable of blurring the definition of objects. Of the luminists, i.e. those whose main concern was the study of the mystery and beauty of light, as mentioned above, Manet was the leader. With Manet and his group, technique was thoroughly investigated for the first time; they ostracised the



MONET'S 'LA GARE ST LAZARE'

Druet

Guerbois, in the Quartier Batignolles; the circle included Monet, Pissarro, Cézanne, Degas, Jongkind, Berthe Morisot, Fantin Latour, Renoir, Desboutsins, Bazille, Legros, and Whistler. They also found sympathetic support in Gautier, Baudelaire, the Goncourts, Zola, Mallarmé, and other men of letters, at different periods. It is therefore justifiable to regard Manet as the leader, though it was not from him that Monet and his friends acquired the idea of painting open-air effects. The study of the mystery and beauty of light, and the study of 'impression,' i.e. the catching and reproduction of a momentary vivid glimpse of a scene, as opposed to the systematic reproduction of the details which are unseen in such glimpses, was pursued by the younger men in the outskirts of Paris and along the Seine. They learned the art of presenting a *tout ensemble* wherein details were either deleted or subordinated to the sum

conventional tonality of brown, and the use of all browns, blacks, and ochres; by the majority all palette mixtures were abandoned and only the pure colours of the spectrum, in addition to white, were accepted.

Side by side with the juxtaposition of touches of pure colour are the principles of: (1) the simplification of light and shade in the presentation of mass rather than outline; (2) the investigation of shadow, which is not absence of light, but light of diminished intensity; and (3) the separation of local colour and reaction. By the employment of these means the impressionists succeeded to a marvellous degree in the portrayal of atmospheric movement—the sway of shadow, the passage of light, the heaving movement of water, the sensation of wind. Pissarro and Sisley were pre-eminent in this respect and Manet departed from his earlier practice in painting as they did in the open. Whistler, it may be noted,

never became an Impressionist in a precise sense of the word, painting from memory and mixing his colours on the palette to the required tone instead of applying pure colour direct. The success of I. in a worldly sense was postponed until the 1880's, when the awakening of a lively interest in the U.S.A., examples began to be sought after. In 1897 the collection of Caillebotte, a wealthy amateur who had befriended I. from the outset and had even gained some small notoriety for his own work, was accepted with reluctance and after considerable hesitation by the Ministry of Fine Arts and exhibited in the Luxembourg. The same year at the Vevey sale, and 2 years later at the Choquet sale, the once despised canvases changed hands for enormous sums. Maue's portrait of Monet in his studio, for instance, which realised about 150 francs in 1884, went for 10,000 francs, while at the Pellerin, Paris, in 1910, even greater prices were offered. I., however, had run its course by then. It had in the 1880's a late new stage, sometimes known as Neo-I. This was the technical device of 'Pointillism' whereby spots of primary colour were applied to canvas (fusing when seen at a distance into the required tone). It was inspired by the scientific colour theories of Helmholtz and Chevreul and was employed by Seurat, Pissarro, and Signac. Its main value was to lead to the use of more positive colour as in Van Gogh's pictures. Renoir, it is to be noted, gave up Impressionist theory in later life; Cézanne pursued a different research, yet the beauty of I. still remains to-day the object of general admiration. In England it gave rise to the foundation of the New Eng. Art Club, in which the work of Wilson Steer and Walter Sickert was notable. See C. Maclair, *French Impressionists*, 1904; W. Dewhurst, *Impressionist Painting*, 1904, with bibliography; C. Marriot, *Modern Movements in Painting*, 1920; F. Rutter, *Evolution in Modern Art*, 1926; W. Uhde, *Die Impressionisten*, 1937; J. Rewald, *The History of Impressionism*, 1947; C. Bell, *The French Impressionists*, 1955.

Impressionism in Music.—Term applied, more or less loosely, to composers (especially Fr.) contemporary with the school of impressionist painters. Debussy, although he disapproved, was designated as the leader of musical I. One of the chief aims of I. is to interpret artistically a momentary glimpse of things rather than their permanent state.

Impressment, act of forcibly taking persons or goods for the public service; but generally restricted to the work of press-gangs in compelling persons to serve as soldiers or sailors in time of war. I. of sailors differed from that of soldiers. It was regarded as a prerogative right of the crown, given by the common law and recognised by statute. This is explained by constitutional historians by the fact that the feudal tenure of land made provision for land but not for sea service. I. of soldiers was declared

illegal by the Long Parliament of 1641, but was occasionally resorted to subsequently, e.g. during the Amer. War of Independence, under special parl. authority. I. of soldiers is to be distinguished from conscription, which, although also a state-regulated method of compulsory enlistment, applies to all able-bodied persons alike. It may be observed here that during the Boer war of 1900 the I. of goods was commonly known by the term 'commandeering'.

Imprisonment, see PRISONS.

Improvisation, the art of composing verses, whether accompanied by music or not, on the spot without preparation, and on subjects suddenly proposed. It is distinctly Italian in origin, though the Provençal troubadours, in spite of the elaborate versification of their poems, are credited with the power. Silvio Antonio (1540-1603) was said to have been made a cardinal because of his skill in composing verses on any subject; Peretti (1681-1747), to the accompaniment of a guitar, astonished the whole of Italy by his skill. He was crowned with laurel by Pope Benedict XIII. Corilla Olimpica, Madame de Staël's Corinne, was also crowned. Outside Italy, the Swedish poet, K. M. Bellman (1740-95), the Fr. Joseph Méry (1798-1865), and the Eng. humorist, Theodore Hook (1788-1841), may be mentioned. The art is practised to-day chiefly in music-hall and cabaret entertainments. Many of the great musicians and instrumentalists have exhibited their power of improvisation. See A. Vitagliano, *Storia della poesia estemporanea nelle lettere italiane*, 1905; E. Ferand, *Die Improvisation in der Musik*, 1938.

Impulse Generator, electrostatic apparatus for producing a single high-voltage wave of steep front, falling off more slowly. A number of capacitors may be charged up in parallel to the same high voltage and then discharged in series into a network. The I. G. is used for testing h.v. equipment and simulates a lightning discharge.

Imputation, attribution to another of some quality or character, especially of a charge of guilt. The term is used technically in theology of the attribution to believers in Christ of His righteousness and merits. See LUTHER.

Imros, see IMBROS.

Imru-ul Qays, Arabian poet of the 6th cent., was the son of the chief of the Kinda tribe, and lived a wandering life among the Arab vagabonds and brigands until the death of his father, who was killed by the Benu-Asad tribe. He is then supposed to have bent his efforts on securing vengeance, and to have obtained troops from the Emperor Justinian. According to tradition, he was shortly afterwards killed by a poisoned cloak presented to him by the emperor, who had been told by some informer that I. had been guilty of seduction. He is the author of one of the 7 *Mu'allakat*, in which he displays great imaginative powers. He is regarded as one of the founders of Arabian poetry.

In Articulo Mortis (literally, at the point of death). In the Rom. Catholic Church only priests who have received jurisdiction from the Pope, from bishops for their diocese, or higher superiors of religious orders for their subjects may or can absolve penitents from their sins. But any priest, even if degraded or apostate, can absolve any penitent *in articulo vel periculo mortis* in all cases, including those of grievous sins which are ordinarily reserved for absolution by some eccles. superior, like the ordinary of a diocese. As to the admissibility in evidence of the declaration of a deceased person relative to the cause of his death, *see under* DECLARATIONS OF DECEASED PERSONS.

In Coena Domini, papal bull, the commencing words of which were 'In Coena Domini,' formerly issued every year in Holy Week. Its object was to publish the papal censure of all heresies, schisms, and infractions of papal privileges, and various temporal crimes. It was first pub. in 1364, and was only discontinued in 1770, when the Pope yielded to the opposition of the European kings who objected to the bull as a limitation of their sovereign authority.

In Forma Pauperis ('in the character of a poor man'), a procedure which enabled paupers to bring or defend actions, which

has now been superseded by the legal aid scheme set up by the Legal Aid and Advice Act, 1949. *See* POOR PERSONS' LEGAL AID.

In Nomine, an exclusively Eng. type of musical composition of the 16th cent., a fantasy or fancy (q.v.), usually for a consort of viols, but sometimes for a keyboard instrument (virginal or organ). It was based on one particular plainsong tune, used as a *cantus firmus* (q.v.), 'Gloria tibi Trinitas.' It has been an unsolved puzzle until recently why this should have been associated with the words 'In Nomine,' but it was discovered by 3 scholars, independently of each other, that in a Mass by Taverner the theme of 'Gloria tibi Trinitas' is used in various ways throughout, but in its complete form only in the Benedictus at the words 'in nomine Domini.'

Inaccessible Islands, *see* TRISTAN DA CUNHA.

Inagua, Great and Little, 2 is. in the archipelago of the Bahamas (q.v.), situated at the S. end of the group. Great I. (area 530 sq. m.) is 355 m. from Nassau, and contains salt ponds. Its prin. tns are Blakeville and Matthew Tn. Little I. is uninhabited. Pop. 1000.

Inari, Lake, in the extreme N. of Finland, in the co. of Lappl. There is a direct air-service in the summer.

